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"THERMOSOL" METHOD OF DYEING*

J W GIBSON, JR, PAUL KNAPP and R J ANDRES

E I du Pont de Nemours & Co, Inc

WITH the advent of the new synthetic fibers, nylon, Dacron polyester fiber and Orlon acrylic fiber, considerable changes in dyeing methods have been necessary for satisfactory coloration of each of them. But even the changes which have been made in the typical dyeing methods have not been adequate for the coloration of these new fibers in many cases. New dyeing methods involving heretofore unrecognized or only slightly recognized principles, have resulted in improved dyeing of these fibers. One of these is the Thermosol process which the Du Pont Company is actively developing.

In the Thermosol process, a surface coating of dye is applied to the fiber which can be in loose staple, tow, top or fabric form. Since a preferred method for applying such a coating is from a liquid medium, a drying step is necessary to remove the liquid, typically water and leave only the coating of dye. After the fibers have been dried, they are exposed for a short time at a high temperature usually above 350° F. During this exposure the color penetrates the fibers and is fast to removal even by the strongest laundering procedure. This fixing treatment is followed by a scour to remove any of the assistants used in the coating step and to remove surface colors which might not have been fixed during the heating step. This three-step method involves simple application of padding, drying and heat-setting techniques, which are well known to dyers and finishers. Further description will point out the type of control which is needed in these steps for optimum performance under mill conditions.

We have, of course, studied the usefulness of this process on each of the fibers and have found that, for many cases of dyeing, Dacron polyester fiber responded very well, since deep shades of excellent fastness and good color yield can be obtained. With Orlon on the other hand, the dry heat fixation is considerably less effective. Although some color is fixed, the yield in most cases is less than 50% of the color applied. This operation is only of limited usefulness on Orlon acrylic fiber. Nylon does not respond as well as Dacron to the heat fixation.

In our studies, we have concentrated primarily on the dyeing of filament goods, since control of the padding and drying steps is more difficult on fabrics in this form than with those from staple. When staple fabrics made from the same fiber are dyed by procedures developed for filament fabrics, commercially acceptable dyeings are more easily produced.

The first step in dyeing Dacron by the pad method with dispersed dyes and one that is extremely important is fabric preparation. Warp sizing, finish and soil which might prevent uniform wetting of the fabric must be removed. For the removal of sizing materials such as Elvanol; Duponol D and trisodium phosphate are preferred, with soap definitely to be avoided. A relaxed scour with exposure to these agents for 20 to 30 minutes, such as in a beck scour, have given excellent results. A Hinnekens machine, while giving relaxed conditions, does not allow for sufficient time of exposure and a jig has not been satisfactory. After the fabric has been properly scoured and dried, it is ready for the next step which involves padding of the dye dispersion.

The preparation of the pad dispersion is also important since it must be a nonfoaming, microscopically dispersed mixture, free of specks large enough to cause spots in the dyeing. The Latyl class of colors are eminently suited for this process. A thickening agent which assists in anchoring the dye particles on the fabric and a moderately volatile organic solvent to produce even spreading of the pigment particles on the fabric surface should also be present. A formula which has produced a number of successful dyeings included 3-4% by weight of a low viscosity, salt-free CMC and 20% by volume of "Cellosolve". The use of these padding assistants, along with colors which disperse in a very fine form has allowed us to obtain excellent, speck-free paddings of good uniformity across the face and

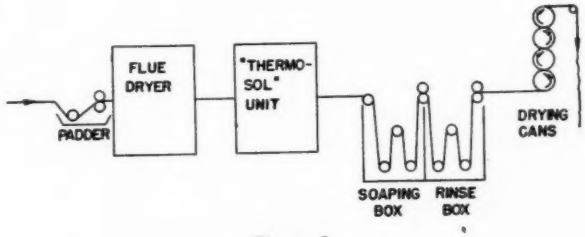

Figure 1

Diagram of Pad-Thermosol

* Presented at Du Pont Technical Conference, Wilmington, Del, August 5, 1952.

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from front to back.

The pad formula besides promoting excellent padding minimizes mark-off and migration during the drying step which follows. It is important to control the drying so that even application of heat to both sides of the fabric will prevent migration of the dye. Flue or loop dryers adjusted to 160° F with good air circulation have been satisfactory. Thus far, steam heated cylinders have caused excessive mark-off.

For the heat fixation step, any heat-setting or curing oven capable of heating fabrics to 350° F or above can be used if the application of heat to both sides of the fabric is uniform and care is taken to avoid wrinkling. Typical exposure times in air for three-ounce filament fabrics of Dacron polyester fiber are one minute at 400° F and 30 seconds at 370° F in hot roll equipment, the time varying directly with the weight of the fabric. An eight-ounce worsted fabric, for example, requires 2 minutes in heated air at 400° F for good fixation.

At the Newport Textile Laboratory we have installed a specially designed hot roll machine for our research on Thermosol dyeing.

After the heat fixation, the fabric is scoured in open width continuous equipment or on a jig or beck, to remove the assistants still remaining in the fabric and traces of loose color. The fabric is then ready for normal finishing and drying.

Laboratory studies have indicated that with suitable mechanical variations, the Thermosol process may be used for dyeing staple, tow and top of Dacron polyester fiber with good results. For example, staple can be immersed in a suitable dye dispersion, the excess removed by centrifuging, and the color developed in a belt conveyor, rawstock dryer. Times for development are usually two to five times longer than for fabrics since thicker layers are being heated. Uniformity requirements are less critical than with fabrics because of the blending obtained during the processing of dyed staple into yarn.

Printing by the Thermosol process has been carried out successfully on a semi-commercial scale.

In addition to Latyl colors, a limited number of vat pigments can be applied by the Pad-Thermosol method in light to medium shades as supplementary colors. In contrast to vat dyes applied to Dacron by aqueous methods, these pigments which are applied without vatting have fastness at least as good as the same dyes have on cotton. These pigments may be used in mixtures with dispersed dyes.

In summary, the Thermosol process involves steps well known to dyers. It produces bright level shades having complete fiber penetration and showing excellent fastness properties. The process is applicable on a continuous basis to both continuous filament and staple fabrics, as well as staple and tow.

ABSTRACTS

The Preservation of Textiles: The Use of Metallic Naphthenates

A E Williams, *Indian Textile J* 62, 549-52, 576, June 1952.

In view of the present high cost of textile materials their preservation becomes of increasing importance, and the use of metallic naphthenates for this purpose is becoming better known, particularly for the treatment of textiles which are subject to outdoor exposure.

Copper naphthenate has become a widely used rot-proonfig agent which has the advantage over such materials as cuprammonium in that it does not affect the strength of the material. It has a disadvantage, however, in that material proofed with it has an odor, and therefore cannot be used for bags or sacks whose contents would be adversely affected by the odor. In the application of the material, the amount of copper naphthenate left on the fiber should not exceed 1 per cent. This restriction is necessary because copper acts catalytically on accelerating the rate of decay by oxidation caused by light, and quantities of copper greater than about 2 per cent, though fully fungicidal, may stimulate rather than prevent decay.

When applied to textiles, it appears from investigations carried out at Bristol University that copper naphthenate exerts a toxic action which is superior to many other compounds because both the copper and the naphthenic acid radicals are toxic.

In work carried out by the U S Department of Agriculture it was found that copper naphthenate was more effective in preventing rot than copper oleate, copper tallate, or copper hydrogenated resinate.

The author describes tests made in South Africa in which copper and zinc naphthenates were compared on various textiles used underground; also a comparison of copper and iron naphthenates on brattice cloth, extensively used in mines for ventilation purposes. In both cases the copper compound was slightly better.

A review of the usefulness of both zinc and copper naphthenates for the preservation of textiles, quoted from the *American Paint & Oil Dealer,* includes some comparative tests on different fungicides. In these tests the naphthenates are reported to be more effective than chlorinated phenols and phenyl mercuric oleate, but the most effective agent was found to be a mixture of the metallic naphthenates with chlorinated phenols.

During World War II much use was made of naphthenates for the preservation of canvas tents, sandbags, ropes, nets, etc, both by the American and British forces.

—WHC

Effects of Unfiltered Carbon Arc Light in Accelerated Weathering of Cotton and Other Textiles

J D Dean, C M Fleming and R T O'Connor, *Textile Research J* 22, 609-16, September, 1952.

The degradative effects produced in cotton and other textile fibers by unfiltered light from a "Sunshine" type carbon arc lamp were compared with those which occurred in identical materials during natural weather exposure tests, in which sunlight is believed to be the chief degrading factor. These comparative tests were designed to afford needed information about the action of short-wave radiation on textiles, and to evaluate the practical utility of such radiation in accelerated weathering techniques.

The textiles employed were bleached cotton print cloth and print cloth finished in a variety of ways, including the application of four vat dyes, resins, and water-repellent and mildew-resistant treatments; also cotton, linen, ramie, wool, and silk yarns and three synthetics.

Fabric samples were exposed to natural weather for 6 months, and yarns for 6 weeks. In the accelerated tests fabric samples were irradiated for a total of 15 hours, both with and without water spray; yarns for 10 hours without spray. Breaking strength losses were determined for all

samples, while fluidity increases were measured in a majority of the cellulosic textiles.

Results of the accelerated tests of chemically finished print cloth were highly misleading in respect to the performance of like samples exposed to the action of natural weather. Fluidity values in the artificial tests were generally small and poorly differentiated, while strength losses varied widely from those observed in natural weather. Although several of the finishing compounds acted to increase degradation of the cotton in natural exposure conditions, all of them proved to be nonsensitizing to cotton in the accelerated tests. These results gave no indication that the unfiltered carbon arc radiation could be used to advantage in predicting the durability of chemically finished cotton in outdoor service.

The strength losses suffered by the different yarns after 10 hours of arc irradiation were found to be in fair qualitative agreement with those caused by 6 weeks of exposure to natural weather. This suggests some possible value for the unfiltered arc radiation in determining the weather-resisting qualities of unfinished textile fibers.—WHC

Review and Practice of the Vat Acid Process

J A Heyder and G N Sandor, *Dyestuffs* 40, 147-59, September, 1952; (from *Textil-Rundschau* 5, 179-86, 1950).

Since the end of the thirties, when the vat acid process appeared among the vat dyeing methods, this process has been much discussed, and many articles have been published about it. Although there was no lack of recognition of the excellent levelness and penetration of material dyed by the vat acid process, there still remained a preponderance of impressive descriptions of the difficulties involved in carrying out the process on a large scale. The authors believe that these difficulties do not exceed the limits of normal dyeing practice. They have therefore re-examined the vat acid process closely, comparing its advantages and disadvantages, and giving full instructions for its practical application.

The preparation of vat acids is begun by preparing a stock vat of the dyestuff. Thereupon the stock vat is rendered weakly acid by means of acetic acid. The mixture of sodium acetate-acetic acid is controlled so as to buffer the solution to a pH of about 5. The authors recommend adding enough acetic acid so that after neutralizing the caustic soda solution used for preparing the stock vat, there is an excess of about 20 per cent of the acid. It is necessary to add also a suitable dispersing agent in order to avoid flocculation.

The advantages of the vat acid process, suggested by the authors, are:

(1) It is not dependent solely on those dyestuffs which are available in finely dispersed form.
(2) Comparatively somewhat better results, compared with the pigment padding process, with respect to uniformity and penetration in piece goods which are particularly hard to dye.
(3) Better applicability in dyeing yarn packages and warps.
(4) More rapid reduction.

The advantages of the pigment padding process are:

(1) Easy handling of the dyestuff pigments.
(2) No limitation in the depth of color.

Compared with the soluble vat process, the vat acid process has the following advantages:

(1) Greater selection of dyestuffs.
(2) In certain cases better overall fastness.
(3) Lower cost.
(4) It is especially suitable for dyeing on the machine.
(5) In some cases on piece goods, improved penetration, more uniform appearance, better evenness at the ends.
(6) It eliminates the use of strong acids and oxidation agents, thereby preserving the goods and machines.

The advantage of the soluble vat process is that the dye is in a handy powder form, thereby rendering shade matching and sample dyeing easier.

A list of vat dyes which are not suitable for the vat acid process is included.—WHC

The Dyeing of Blends Containing Acetate Rayon

C P Tattersfield, *British Rayon & Silk J* 29, 44-5, September, 1952.

When acetate rayon was first marketed, one of its outstanding features was its ability to resist most known types of dye and hence provide very suitable effect threads which could be reserved in cross dyeing. This technique has limitations, of course, and until ranges of dyes for dyeing the fiber were produced, its future was of necessity extremely limited. After prolonged and intensive research suitable dyes were evolved, the most important commercially being the "dispersed" acetate dyes. Acetate staple is today used in blends with wool or cellulosic fibers for its reserve and cross-dyeing characteristics, but there are in addition many other properties it can confer on a blend. With wool, one of these is the ability to reduce the felting tendencies of wool, and often the addition of 50 per cent acetate rayon staple will obviate the otherwise necessary process of chlorination. When blended with viscose staple, it is similarly able to confer increased stability in washing—not against felting but against shrinkage. For these and other reasons, acetate staple is used regularly in blends with wool or viscose staple.

Acetate-Wool Blends. Solid shades are produced by selected fast-to-milling acid dyes and dispersed acetate dyes applied from the same bath; or the wool is dyed first with after-chromed, premetallized, or acid dyes, and the acetate dyed later with dispersed acetate dyes.

If the wool only is to be dyed, all classes of wool dye may be used, but it should be remembered that certain members of most classes have the ability to stain acetate rayon staple and should therefore not be used. Dyeing acetate only is best avoided, as most dyestuffs which dye acetate rayon will stain wool to a greater or less degree.

Acetate-Viscose Blends. Solid shades are most easily and most usually obtained by dyeing the blend fabric with suitable mixtures of direct cotton dyes and dispersed acetate dyes.

If the viscose only is to be dyed, both direct and developed cotton dyes, with certain exceptions, will normally reserve acetate completely. Vat colors applied under normal conditions would saponify the acetate, but the Soledon-type (leuco ester) dyes may be used. Dyeing acetate only can be achieved in pale shades, but in medium or dark shades some staining of the cellulose may take place. This may be cleared in some instances by subsequent soaping or hydrosulfite treatment.—WHC

Latest Procedures for Dyeing Dynel

T A Feild, Jr, *Textile Age* 16, 45-51, October, 1952.

There are three basic requirements for the practical commercial dyeing of dynel: first, use of dyeing temperatures of about 205° F or above; second, maintenance of the luster of the fiber; third, consideration for the fact that the fiber is thermoplastic.

In the application of acetate dyes to dynel few precautions are necessary other than to disperse the dye with minimum amounts of dispersing agent and to conduct the dyeing at temperatures of 205° F or above. Since dynel will blush in boiling water or at the dyeing temperature of 205° F, steps must be taken to avoid this condition. Addition of sodium sulfate to the dyebath midway in the dyeing has been found to do an excellent job of minimizing blushing (loss of luster).

In the application of acid and direct dyes to dynel three procedures have been used successfully. In the first method, used almost exclusively for pastel shades, the dye is applied from an acid bath at a boil

without the aid of dyeing assistants. In the second method, used for medium shades, low amounts of copper sulfate with zinc formaldehyde sulfoxylate to reduce the copper are added first to the dyebath at room temperature. After the dye is added, the temperature is raised and dyeing is carried out at a boil for 60 minutes. The bath pH is usually adjusted to a value of 5. In this procedure, the cuprous ion increases the dye affinity. The third method, used for heavy shades, is similar to the second, but a swelling agent, usually p-phenylphenol in amounts up to 2.25 per cent, is added at the start, and the bath pH is adjusted to 6.

Cuprous copper is specific to acrylonitrile-base fibers, and is believed to form a bond between certain nitrile groups in the fiber and dyestuff molecules. Those fibers with the highest acrylonitrile content therefore have the highest receptivity for dyes fixed with cuprous copper. Acrylic fibers dyed by the cuprous-ion method are characterized by unusually good fastness to washing. An improved technique for controlling the addition of copper is described.

The author makes the following observations:

1. Acetate dyes have excellent leveling qualities, very good wash fastness and, with proper selections, especially of the blue component, excellent light fastness.

2. Acid dyes applied by the "Controlled Addition of Copper" technique have outstanding wash fastness and light fastness commensurate with the dyes selected.

3. Mixtures of acid and acetate dyes applied by the "Controlled Addition of Copper" technique are of particular importance where very heavy shades with excellent wash and light fastness are required.

4. Light-fastness measurements made on the Fade-Ometer are generally much more severe than those made in natural sunlight. The differences in fastness to the two sources of light are not constant but vary with the dyestuff. Usually, Fade-Ometer exposures are browned, while natural sunlight bleaches the color.

The author discusses the details of stock, package, and hosiery dyeing.—WHC

Theory and Practice in Dyeing Vinyl Fibers

Baron, A M, *Teintex*, 33-55 (Jan 15, 1952).

The author discusses first the different brands of vinyl-polymer fibers, ie, the French products Rhovyl and Thermovyl (polyvinylchlorides), the German P C fiber (a perchlorinated polyvinylchloride product) and the U S Vinyon, and then the acrylic fibers Orlon, Vinyon N, Chemstrand and dynel.

Rhovyl and Thermovyl are interesting for various reasons, as are the other purely synthetic fibers because of their resistance to chemical agents and to combustion. Coloring of these fibers is known to pose special problems. Polymer resins can generally be dyed by pigments dispersed in the mass and some suitable products are indicated. But this selection has to be restricted in the dyeing of polyvinylchloride fibers because they tend to develop some chlorine under the influence of heat and light, thereby damaging the pigments. Carbon Black, some organic pigments and especially the phthalocyanines may be used. In applying dyes of the dispersed class which form solid solutions in the fiber's mass special efficient dispersing agents (ethylene oxide derivatives of fatty bodies, the "Sunaptols") are preferred. Insoluble azodyes might require solution of one of the components and insolubilization by an aftertreatment with the other component. The use of stabilized brands of the Rapidogen (Naphthazogene) type, soluble in the fiber's mass and developed by simple acid treatment, is said to be the subject of a recent patent application.

Rhovyl, the long, stretched fiber (in contrast to Thermovyl, the production of which is analogous to spun rayon) has the drawback of shrinking considerably at temperatures as low as 75-80° C, thus requiring the use of a solvent applied in emulsion as a swelling agent. Preferably it should volatilize at low temperatures after dyeing. It has been found that ethylbenzoate, emulsified with "Sunaptol" is very satisfactory. The pad dyeing and jig dyeing of Rhovyl is explained along with many details including formulas and best dye brands of the dispersed class. Further information regarding the dyeing of Thermovyl and mixtures with wool, spun rayon, cotton and nylon, as well as some suggestions for fluorescent dyeing are presented. (In French)—PW

Dyeing Properties of Hydrophobic Textiles

Joly, *Teintex*, 139-155 (March 15, 1952).

The term "hydrophobic textiles," as used in this article, comprises fibers of lesser swellability in general, (acetate rayon, nylon, Rhovyl, etc) which require special dyeing methods.

Part of the current article deals with the problem of dyeing nylon with logwood. The best procedure consisted of dyeing at pH 4 with nonoxidized hematine in the presence of a dispersing agent (Resoline B, an alkylaromatic sulfonate) at temperatures from 60 to 95° C within an hour, rinsing cold and afterchroming with dichromate in acetic acid at pH 3 and a temperature of 95° C. The dyeing of acetate of cellulose has also been tried using the same method. After the first experiments proved unsatisfactory, the correct pH of the afterchroming bath was found to be most important. A table serves to point out that increased pH values of the Cr- containing bath changed the shades from brown or brownish black to a deep black (at pH 4.5-5.5). A further increase in pH shifted the shade to the gray side.

Dyeing is carried out at pH 3.5 and afterchroming in a bath buffered to pH 4.5-6 (monosodium phosphate) by adding an electrolyte (anhydrous sodium sulfate) to prevent bleading of the hematine. Another method of dyeing the "hydrophobic" fibers, termed "dyeing by precipitation," is characterized by the use of dispersible, water insoluble dyes and flocculation of the suspensions (apparently before dyeing) by a precipitating agent. The dye is said to be adsorbed faster.

An example cites the dyeing of cellulose acetate with a soap dispersion of Cibacet Violet B poured into a dyebath containing sulfite waste liquor as a protective colloid and formic acid, and adjusting the bath to pH 4. Patent has been applied for by Rhodiaceta Co. The dyeings are said to penetrate well and to be fast to crocking. This method can be extended further to dyeings under modified conditions with diazotized black acetate dyes; appropriate formulas are disclosed. The dyeing of mixed fibers (acetate-wool or Thermovyl-wool), using dispersed dyes and nonionic dispersants, is explained. Dyeing of wool-nylon blends is effected principally with appropriate acid dyes, and the application of "Orasol" (Ciba) and "Capracyl (Du Pont) dyes is discussed. (In French)—PW

Treatment of Textiles with Vapors Containing Different Gases

Haller, R, *Textil-Rundschau*, 359-365 (August, 1952).

The author states that processes that take place in standard agers, kiers and other steam-filled equipment can hardly be observed from the outside, a fact which may confront textile chemists with serious problems. A tentative device (illustrated in the article) has been developed, enabling the research chemist to follow the action of steam on small specimens with and without the addition of reactive gases. This device consists of a Soxhlet-type flask filled with water and provided with a funnel in order to add different gas-forming reagents. The flask is heated to bring the water to boil and condensed water is permanently drawn off. The upper part, which is filled with steam, contains a glass helix carrying the sample that can currently be observed during the operation. Various agents, such as acetic and formic acids, chlorine, formaldehyde, sulfur di-

(concluded on page 32)

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Student Chapters

BRADFORD DURFEE TECHNICAL INSTITUTE, CLEMSON COLLEGE, GEORGIA INSTITUTE OF TECHNOLOGY, LOWELL TEXTILE INSTITUTE, NEW BEDFORD TEXTILE INSTITUTE, NORTH CAROLINA STATE COLLEGE, PHILADELPHIA TEXTILE INSTITUTE, UTICA TECHNICAL INSTITUTE, FAIRLEIGH DICKINSON COLLEGE

EMPLOYMENT REGISTER

This column is open for two insertions per year, per member, without charge. Blanks can be obtained from, and filed with, the Secretary of the Association, Lowell Textile Institute, Lowell, Mass. It is understood that these will be open to inspection by prospective employers who can obtain further information from the Secretary.

52-70

Education: Ph D, Lausanne, Organic Chemistry, with education in textile microscopy at Mass Inst Tech.

Experience: research in organic chemistry and textile dyeing and printing.

Age: 62; single; references; North Atlantic coast preferred.

1-5, 1-22

Piedmont Section to Meet Jan 10

THE first technical meeting of the new year for the Piedmont Section will be held on January 10th at the Clemson House, Clemson, S C.

The Research Meeting is set for 10:30 in the Clemson Textile School Auditorium with Neal A Truslow, Chairman of the Research Committee, presiding.

Following the Officers' Luncheon at 1:00 pm, the afternoon technical session will feature J V Boone, Geigy Co, Inc, who will speak on the subject "Organic Sequestering Agents in Textile Wet Processing".

Guest speaker at the evening banquet session will be Audley H Ward.

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Meeting Report—North Carolina State College Student Chapter

November 19, 1952
Raleigh, N C

AT a meeting of the North Carolina State College Student Chapter on Nov 19, 1952, Robert H Nuttall, head of American Aniline Products, Inc's technical department in Charlotte, N C, discussed recent developments in the vat color printing of drapery fabrics. For illustration he dyed a piece of drapery goods with a naphthol.

Respectfully submitted,

WILLIAM L MILLER, *Secretary*

CALENDAR

AATCC

COUNCIL
Jan 16, April 17, June 5

GENERAL RESEARCH COMMITTEE
(See Council dates)

NATIONAL CONVENTIONS
September 17-19, 1953 (Hotel Conrad Hilton, Chicago); 1954 (Atlanta, Ga); Sept 21-23, 1955 (Chalfonte-Haddon Hall, Atlantic City, N J).

HUDSON-MOHAWK SECTION
February 6, March 20, May 8 (Albany); June 19 (Outing).

MID-WEST SECTION
February 14 (Hotel Bismarck, Chicago, Ill); April 18 (Netherland Plaza, Cincinnati, O); June 20 (Outing, Lake Delavan, Wis); November 7 (Hotel Bismarck).

NEW YORK SECTION
January 30, February 27 (Hotel Statler, New York, N Y); April 17, May 22 (Swiss Chalet).

NORTHERN NEW ENGLAND SECTION
Jan 9 (Hotel Vendome, Boston); Mar 6 (MIT Faculty House, Cambridge); April 17 (Lowell Textile Inst, Lowell); May 15 (Andover CC, Andover); June 12 (Annual Outing); Nov 6 (LTI); Dec 4 (MIT Faculty House).

PACIFIC SOUTHWEST SECTION
Jan 16 (Mona Lisa Restaurant, Los Angeles); April 24 (Nikabob Cafe, Los Angeles).

PHILADELPHIA SECTION
Jan 16 (Kugler's Restaurant).

PIEDMONT SECTION
Jan 10 (Clemson House, Clemson, S C); April 11, (Robert E Lee Hotel, Winston-Salem, N C); June 12-13 (Mayview Manor, Blowing Rock, N C); Sept 12 (Hotel Charlotte, Charlotte, N C).

WASHINGTON SECTION
Jan 9 (Washington, D C)—Organizational Meeting.

WESTERN NEW ENGLAND SECTION
Jan 30, Mar 20 (Rapp's Restaurant, Shelton, Conn); May 8 (Ladies Night); June 19 (Outing); Oct 2, Nov 6 and Dec 11 (Rapp's).

OTHER EVENTS

AMERICAN ASSOCIATION OF TEXTILE TECHNOLOGISTS
2nd Annual Symposium, Feb 3, Hotel Statler, New York.

AMERICAN SOCIETY FOR TESTING MATERIALS
1953 Annual Meeting, June 29-July 3, Chalfonte-Haddon Hall, Atlantic City, N J.

AMERICAN TEXTILE MACHINERY ASSOCIATION
Exhibit of American Textile Machinery, April 26-May 1, 1954, Atlantic City Exhibition Hall, Atlantic City, N J.

CANADIAN ASSOCIATION OF TEXTILE COLOURISTS AND CHEMISTS (Quebec Section)
Jan 17, Feb 21, Mar 21 (Physical Science Centre, McGill Univ, Montreal, Que); April 17-18 (Annual Meeting, Mount Royal Hotel, Montreal, Que); June 20 (Annual Golf Tournament).

GLYCERINE PRODUCERS' ASSOCIATION
Convention, Jan 27 (Waldorf-Astoria, New York, N Y).

NATIONAL ASSOCIATION OF HOSIERY MANUFACTURERS
41st Knitting Arts Exhibition, April 27-May 1, Atlantic City Auditorium, Atlantic City, N J.

NATIONAL COTTON COUNCIL
15th Annual Meeting, Jan 26-27 (Dallas, Tex); 4th Annual Cotton Research Clinic, Feb 18-20, Oglethorpe Hotel, Savannah, Ga.

NEW YORK BOARD OF TRADE (DCAT)
27th Annual Drug, Chemical and Allied Trades Dinner, March 5, Waldorf-Astoria, New York, N Y.

SOCIETY OF PLASTIC ENGINEERS, INC
9th Technical Conference, Jan 21-23 (Hotel Statler, Boston, Mass).

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION OF THE UNITED STATES
Jan 14, Feb 11, March 11—all at the Hotel Commodore, New York; June 11-13 (Joint Outing with Manufacturing Chemists' Association at The Greenbrier, White Sulfur Springs, W Va.

AUDITOR'S REPORT

To the Members of the
American Association of
Textile Chemists and Colorists:

We have made an examination of the accompanying statement and supporting schedule summarizing the receipts and disbursements of the treasurer and secretary of the American Association of Textile Chemists and Colorists for the year ending July 31, 1952. In connection therewith, we examined or tested the cashbooks and other records supporting the receipts and disbursements, by methods and to the extent we deemed appropriate, but we did not communicate with the members to confirm the amount of recorded receipts from dues and subscriptions.

In our opinion, the accompanying statement and supporting schedule fairly summarize the recorded receipts and disbursements of the Association for the year ending July 31, 1952 and the balances of cash in banks, advance expense funds, and securities owned as of that date.

PRICE WATERHOUSE & CO

Boston 10, Mass
September 29, 1952

TREASURER'S REPORT

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS
STATEMENT SUMMARIZING RECEIPTS AND DISBURSEMENTS FOR THE YEAR ENDING JULY 31, 1952

TREASURER'S REPORT

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

STATEMENT SUMMARIZING RECEIPTS AND DISBURSEMENTS FOR THE YEAR ENDING JULY 31, 1952

		Allocation of Funds								
			Special Research Projects							
	Total	*General Research*	*Philadelphia Section Research Project*	*Colour Index (Second Edition)*	*American Dyestuff Reporter Prize Award Fund*	*American Viscose Co Scholarship Fund*	*Olney Library Fund*	*Olney Medal Fund*	*Technical Supplies*	*General*
				(See footnote)						
Receipts:										
Membership dues:										
Corporate memberships	$ 44,135.00	$ 42,080.00								$ 2,055.00
Sustaining memberships	697.50	697.50								.....
Senior, Junior, Associate and Student Memberships	47,895.75	.....								47,895.75
Total membership dues	$ 92,728.25	$ 42,777.50						$.....	$.....	$ 49,950.75
American Dyestuff Reporter—Prize Award Fund	1,127.50	.....			$1,127.50			.....	.....	.....
Annual meeting registrations—net amount received from New York Section	21,306.52	19,389.52			.....			.....	.....	1,917.00
Dividends and interest received	3,633.80	1,776.59			107.00			346.25	.....	1,403.96
Miscellaneous income, per accompanying schedule	12,907.52	505.00			.....			.....	12,392.52	10.00
Total receipts	$131,703.59	$ 64,448.61			$1,234.50			$ 346.25	$12,392.52	$ 53,281.71
Disbursements:										
Research salaries and expenses	$ 47,545.78	$ 47,545.78		$.....	$.....		$	$.....	$.....	$.....
Salary, paper costs and other expenses chargeable to Colour Index project (see footnote)	26,415.82	.....		26,415.82	.....		.....	.....	.....	.....
Howes Publishing Company—Subscriptions to American Dyestuff Reporter	17,309.28	.....		.....	.....		.....	.....	45.00	17,264.28
Disbursements for account of Olney Medal Fund	143.02	.....		.....	.....		.....	143.02	.....	.....
Disbursements for account of Olney Library Fund	197.91	.....		.....	.....		197.91	.....	.....	.....
Secretary's expenses, clerical assistance, etc	20,507.54	.....		.....	.....		.....	.....	3,602.05	16,905.49
American Dyestuff Reporter Prize Award	200.00	.....		.....	200.00		.....	.....	.....	.....
Publicity	660.86	429.93		.....	.....		.....	.....	.....	230.93
Purchases of technical supplies for resale	9,393.08	.....		.....	.....		.....	.....	9,393.08	.....
Accountants' fee	400.00	.....		.....	.....		.....	.....	.....	400.00
Section membership allowances (net)	1,860.59	.....		.....	.....		.....	.....	.....	1,860.59
Trade association dues	100.00	.....		.....	.....		.....	.....	.....	100.00
Bonds for treasurer, assistant treasurer, and secretary	150.00	.....		.....	.....		.....	.....	.....	150.00
Other general expenses	1,066.74	160.00		.....	.....		.....	.....	.....	906.74
Total disbursements	$125,950.62	$ 48,135.71		$26,415.82	$ 200.00		$197.91	$ 143.02	$13,040.13	$ 37,818.03
Excess (deficiency) of receipts over disbursements	$ 5,752.97	$ 16,312.90	$.....	($26,415.82)	$1,034.50	$.....	($197.91)	$ 203.23	($ 647.61)	$ 15,463.68
Reallocation of prior years' charges between funds (see footnote)	.....	.....	.....	(15,035.24)	.....	.....	.....	.....	15,035.24	.....
Cash in banks, advance expense fund and investments (at cost), July 31, 1951	249,916.97	112,480.65	2,000.00	.....	4,072.50	1,424.77	261.58	6,120.95	6,046.52	117,510.00
Cash in banks, advance expense funds and investments (at cost), July 31, 1952	$255,669.94	$128,793.55	$2,000.00	($41,451.06)	$5,107.00	$1,424.77	$ 63.67	$6,324.18	$20,434.15	$132.973.68

Summary of cash in banks, advance expense funds and investments at July 31, 1952:	
Cash in banks	$ 44,038.41
Advance expense funds	3,500.00
United States Savings Bonds, Series F (value at maturity, $40,000; redemption value at July 31 1952, $37,360) at cost	29,600.00
United States Savings Bonds, Series G, (face value $22,000; redemption value at July 31, 1952, $21,024), at cost	22,000.00
$10,000 United States Treasury Bonds 2½% 1967-72 at cost (value based on market quotations July 31, 1952, $9,800)	10,017.68
$50,000 United States Treasury Bonds 2% 1952-53, at cost (value based on market quotations July 31, 1952, $50,016)	50,444.13
$30,000 Federal Land Bank Bond (Consolidated Federal Farm Loan) 2¼%, 1955-53, at cost (value based on market quotations July 31, 1952, $29,868)	30,046.88
$25,000 Commonwealth of Massachusetts, Metropolitan Water District Bonds 1½% due October 1, 1952, at cost (value based on market quotations July 31, 1952, $25,000)	25,486.41
Other marketable securities, at cost (value based on market quotations July 31, 1952, $52,622)	40,536.43
	$255,669.94

Note: The Association has entered into an agreement with The Society of Dyers and Colourists of Bradford, England, jointly to compile and publish a book entitled "Colour Index (Second edition)". Under the memorandum of agreement dated January 18, 1952 the work of preparation is to be shared equally and all costs incurred in the compilation, printing, distributing, etc, are to be borne equally by the parties thereto. Future net losses or revenues arising from the production and sale of this work are to be borne by or divided equally between the parties. The original cost of production is presently estimated to be £90,000 of which £45,000, equivalent at the current rate of exchange to approximately $125,500, represents the Association's present total commitment. As indicated above, the Association has expended in salaries and other costs a total amount of $41,451.06 to July 31, 1952, of which $26,415.82 represents expenditures during the fiscal year ending on that date and $15,035.24 represents expenditures in prior years which are now considered to be applicable to this project.

Respectfully submitted:
ALBERT E SAMPSON, Asst Treasurer
American Association of Textile Chemists and Colorists

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS
SCHEDULE OF MISCELLANEOUS INCOME FOR THE YEAR ENDING JULY 31, 1952

Research:		
Launder-Ometer royalties	$ 325.00	
Proceeds from sale of office equipment and fixtures	180.00	$ 505.00
Sales of technical supplies, royalties, etc:		
Yearbooks	$2,182.03	
Dye standards	632.71	
Knitted tubing	184.80	
Dyestuff Reporter and reprints	420.28	
Crock-meter cloth	2,071.32	
Crock meters	2,441.86	
Moth cloth	408.03	
Multi-fiber cloth royalties	1,110.64	
Flammability tester royalties	8.00	
Water-test apparatus	748.40	
Gas fading units	144.80	
Color transference charts	545.00	
Analytical methods	1,027.65	
Buttons	54.00	
Colour index	210.00	
Cotton skeins commissions	85.00	
Standard grease wool	112.50	
Apparatus catalogs and dry cleaning kits	5.50	12,392.52
General:		
Proceeds from sale of office equipment and fixtures		10.00
Total miscellaneous income		$12,907.52

Meeting Report—Hudson-Mohawk Section

October 31, 1952
Hotel Utica, Utica, N Y

THE second fall meeting of the Hudson-Mohawk Section was held at the Hotel Utica on Friday, October 31, 1952 at Utica, New York. Thirty members attended this session.

Cecil Wills, Assistant General Superintendent of the New York Mills Division, A D Julliard and Company, Inc, presented a paper entitled "Modern Conception of Cotton Fibers Relative to Their Processing".

Mr Wills' paper encompassed the modern ideas on the progressive growth and development of the individual cotton fiber and influences on bleaching, dyeing and finishing.

Special guests of the meeting included members of the faculty and student members of the Utica Technical Institute Student Chapter.

Respectfully submitted,
WILLIAM A NELSON, *Secretary*

Annual Report of the Secretary—Mid-West Section

DURING 1952, three regular meetings and an outing were held.

The Winter Meeting was held at the Bismarck Hotel, Chicago, Ill., on February 16th. The afternoon speaker was Merrill G Morris, National Aniline Division, whose talk was entitled "The Dyeing of Materials for Plain and Face-Finished Auto Fabrics". A film, "The Story of Du Pont Research," was shown at the evening meeting, which was attended by 120 members and guests.

The Spring Meeting was held in Cincinnati, Ohio, on April 19th at the Netherland Plaza Hotel. The afternoon talk was "Peroxide Bleaching of Textile Materials" by H G Smolens, Buffalo Electro-Chemical Co. The evening talk, given by G D Fronmuller, Commonwealth Color & Chemical Company, was entitled "The Nature of Dyeing the New Synthetic Fibers". This meeting attracted 117 members and guests.

The Annual Outing was held on June 14th at Lake Lawn Lodge, Delavan, Wis, and was attended by 178 members and guests.

The Fall Meeting was held at the Bismarck Hotel, Chicago, Ill, on October 4th, with 106 members and guests in attendance. The afternoon session featured Helen Sisson, Phoenix Hosiery Co, whose talk was entitled "The Interdependence of the Dyer and the Stylist". The speaker at the evening session was Henry Millson, Calco Chemical Division on the subject "Microscopical Dyeing Phenomena—Studies with the Microdyeoscope."

As of November 1st the Mid-West Section membership was as follows:

328 Senior Members
44 Associate Members
14 Junior Members
25 Corporate Members

The average attendance at the yearly meetings was 130.

Respectfully submitted,
VICTOR H LAWRENCE, *Secretary*

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Meeting Report—Philadelphia Section

December 5, 1952
Kugler's Restaurant, Philadelphia, Pa

THE last meeting of the 1952 season of the Philadelphia section was held on Friday, December 5, 1952, at Kugler's Restaurant, Philadelphia.

Approximately 150 members and guests attended this meeting to hear H G Smolens, Buffalo Electrochemical Co, Inc, on the subject "Hydrogen Peroxide Bleaching of Textile Materials".

Dr Harry E Morton, Professor of Bacteriology at the University of Pennsylvania School of Medicine, was the special after-dinner speaker on the subject "Latest Phases of Chemical and Biological Warfare".

Prior to the dinner a special sound Technicolor film entitled "Target USA" was presented through the cooperation of the Philadelphia Civil Defense Council.

Respectfully submitted,
THOMAS J SCANLON, *Secretary*

OLNEY MEDAL CANDIDATES

THE Committee of Award would like suggestions regarding candidates for the Olney Medal Award of 1953. These should be in the hands of H C Chapin, AATCC Secretary, not later than March 1, 1953. Data on the accomplishments of candidates should be specific in such matters as journal references or patents, but all definite information will be helpful. Letters from several sponsors of one candidate are needless, except for giving additional data.

Under the rules the basis of award is outstanding achievement in the field of textile chemistry, which is understood to include the development of chemical agents or chemical processes used in the manufacture of textiles or methods of evaluation.

In making awards, the Committee need not be confined to the consideration of any one specific achievement or contribution, but may in its discretion consider the sum total of various and continued contributions to the field, no matter of how long duration.

The citation of the award drawn by the Committee and accompanying the presentation of the medal, shall set forth clearly the occasion for the award.

The voting members of the Committee are William D Appel, *Chairman;* Henry A Rutherford, Raymond W Jacoby, Harley Y Jennings and AATCC President Robert Bonnar, *ex officio.*

1952 Annual Convention——

FASHION'S FOIBLES*

SUSAN EASTMAN

Fabric Editor, Glamour Magazine

THIS title, "Fashion Foibles", distressed me somewhat when I was told of its selection, *foible* meaning a weakness or frailty, according to Webster. This was the very misconception I had hoped to dispel in this discussion, as it indicates clearly the typical male, and, I might say, mill, attitude toward fashion—unpredictable, impractical—a persistent and annoying gnat buzzing about the heads of men concerned with matters of consequence. Praise be to Webster, however, because his second definition of *foible* is "the part of a sword blade between the middle and the point" in other words, the liaison between the mill, which holds the sword and the point, which scores by striking the customer and drawing what some consider these days *almost* life's blood . . . money! Enlarging upon this sword analogy, let us consider the other parts of the blade: directly beneath the hilt, which you hold, is the forte, or strongest part of the blade. This is, of course, the manufacturer, your customer. The middle, named for that section of the blade, is the retailer . . . though at times there may be differences of opinion as to who *is* in the middle. Finally, between the middle and the point (of sale) there is the foible, which is fashion and its promotion. This is the most flexible part of the blade, affording the wielder of the sword maneuverability in striking . . . and scoring . . . with the point.

It is important to bear in mind that each of these components is dependent upon the others, and they must work together to produce a well-balanced weapon that will reach its target accurately. Naturally, the more practice they have together, the more perfect becomes their performance! I can well imagine that you might feel somewhat remote from the faraway sale and customer, because so much distance and time lies between you. By the time the special weave, pattern, color or finish you developed for a particular promotion is actually made up into garments, delivered to the stores and bought by the consumer, it is ancient history to you as you have by then made and delivered the following season's sample cuts and have blankets in work on the next . . . which is about a year's span. Added to this, you seldom see the far-reaching results of your all-out efforts on such an enterprise; if you are reminded of it at all, you chalk it off as just another of Fashion's Foibles. The time element being what it is, it is not likely that you would connect the couple of thousand yards of "that heavenly blue" you made four or five seasons ago for some crazy designer, with the miles of blue you are grinding out today . . . but that's the way it works.

Susan Eastman

Complementing science and technology in the textile industry are those broad aspects of fashion, styling, custom, and consumer economics which pertain to the apparel and decorative fields. Cutting through the devious and often confusing channels between supplier and consumer, this paper discusses the real low-down on why we have to dye browns one season, blues the next; whether the color patch which the dyer knows as pink 347C is supposed to suggest the current tint of sin, evoke memories of spring nights on the Tigris, arouse patriotism or whatever, incidental to luring the dollars from Milady's husband's checking account. Discussed are such problems as why we try to make fabrics limp and drapey one year, and stiff and flouncy the next. Who causes us to dig out our old calico rollers for a few months, and then hide them while we engrave up what to us looks like Dali nightmares, only to switch again to rosebuds and again to checks.

The mechanics of fashion are also considered. Who calls the tricks? What are the cycles, if any? Which of the trends result from demand, and which are originated by custom stylists, stores, shows, politics, current literature, Hollywood, public figures, or just some fashionable artist doodling in odd moments? How are the extremes toned down for general consumption? What are the risks in bad guesses? Where do out-of-fashion stocks end up? How long can a fashion leader keep it up? Most of these questions and the answers are hazy to the man who makes textiles The revelations are interesting, informative, and of utmost significance to the textile man's welfare.

I have spent some time in attempting to define *fashion*, and it seems to me we can best understand it by breaking it into three parts: first, the high fashion trend, sometimes known as the straw-in-the-wind, hence an indication of things to come. This is the forerunner, the early glimmer, often from the European collections, or from the top American designers. Second, it appears at the volume fashion level, usually, the following season. It is at these two points that the magazine fashion promotion comes in, but it doesn't sell in enough volume to keep the whole mill running three shifts. The fashion promotion, however, helps it to gain acceptance, so that in another season or two it does become big volume reaching its third phase, and the yardage mounts by leaps and bounds. By this time, of course, fashion has another trend a-borning—the cycle must keep repeating itself, each time with something new, or more accurately, with a new approach to something we haven't seen in some time.

This seemingly constant change is essential to continued sales, because it is important to offer the customer something new and tempting, else why should she buy? The women's wear business is not built on replacement. We are not concerned, however, with change for its own sake; remember that the trend I spoke of takes several seasons, often more to build up volume acceptance. And, while we are ferreting out new trends, we are still very much aware of the volume selling that goes on from the previous trend and makes money long after we fashion people have lost interest in it from a news standpoint. A good example of this is the interest that has been growing for the past three years in textured fabrics . . . the novelty-yarn

* Presented at the Statler Hotel in Boston on November 6, 1952.

poodles, bouclés, slubbed fabrics. We hailed them as new in early 1950, previewing the fall season of that year; by the following fall season, there was considerable acceptance of poodlecloth at all levels; during the current fall season (the third year), poodles and bouclés have attained tremendous volume, which is sustained for the Spring 1953 season. From the fashion viewpoint, they had lost their news value by Fall 1952, or current season, and we were more interested in the smoother, brushed surfaces such as sidelines. Now, looking at the coming season, Spring 1953, we find that smoother, more simplified surfaces, alpaca suitings, plain weaves of all kinds, dry crepes, polished surahs and gabardines, are the textures that look new to us. This is as logical and inevitable as the swing of a pendulum . . . and it does not mean that we expect poodles to drop dead at once . . . but they will most certainly taper off after this peak volume and the smoother surfaces will again come in, gradually move through another cycle . . . and so on.

Conversely, during this same period as fashion interest grew in textured fabrics and lessened in smooth ones, many mills persisted in producing their accustomed volume in gabardine because it had been so good for so long. By last year volume interest had slackened to such a degree on gabardine that the market was glutted with them and no sauce could make them palatable! Currently, as interest in the smooth fabrics returns, there is very little good gabardine to be had in this market and thereby hangs the tale and lesson of timing.

I cite this particular texture story only as an example. There are many others I might use to show you that fashion trends are not sudden and erratic, but that they evolve from past performances. To illustrate this, I would like to point out that one of the important color families *Glamour* is promoting for Spring 1953 is the "Seashell Colors". These range from a pale parchment beige through pale apricot and caramel into subtle burnt oranges. They are a Spring translation of our successful September promotion, the "Harvest Colors", a range of copper-apricot and warm browns that sold widely throughout the market this Fall season.

Other factors that influence fashion trends are current events, including the arts, changes in our way of life . . . witness the tremendous increase in "at home" clothes since the advent of TV . . . and numerous other factors, as well as the more obvious influences of the fashion leaders and couturiers of America and Europe. It is from these myriad sources that the fashion person, be she stylist, designer, publicity director, fashion coordinator or editor draws her fashion ideas and deduces the trend, together with that indefinable and somewhat mysterious quality called "fashion sense". That is, in part, a combination of good taste and the ability to recognize fashion news that will sell, or can be translated into saleability. It might be compared to the aviator's term of flying by the seat of one's pants; perhaps it becomes a sort of highly developed instinct. Another essential is decision once the trend is determined, which often involves sticking out the neck. The ability to make a decision and back it up is tremendously important, and influential.

Obviously, timing is of utmost importance in all of this. I doubt if any among you has not had the experience of dropping something new because it didn't do much volume, only to have your competitor make a killing on the same thing a year later. The reverse of this is just as bad; that of persisting in the production of the same amount, or worse, more, of a fabric because it sold in volume last year and the year before. This not only makes for distress goods but ties up equipment that should be starting some production on what will eventually become the new volume replacement.

The relation of the textile technician to the fashion person should be a very close one. He should respect her judgment and try wherever possible to achieve the developments she suggests toward being prepared for the new fashion trend, and not force instead his pet new development if it has no fashion potential even though it is a great technical achievement. She, in turn, should keep her requests within the bounds of the mill's equipment, and not demand jacquards from a mill that has only box looms, nor plaids from a mill that has none.

Now, how does the fashion magazine fit into this picture? The function of the fashion magazine is to educate the customer to fashion news, and to keep educating her as news develops by presenting the fashions attractively through its pages. We at *Glamour* believe that it is also our job to make certain that the fashion is available in the store when the customer wants it, and toward this end, once a fashion has been selected for an editorial, we check fabric availability at both the mill and cutter level, making sure that sufficient fabric has been ordered in ample time to assure delivery to the store by the time that particular issue is on the newsstand.

This all sounds more involved than those pretty pictures led you to believe, doesn't it? Well, it is and there's more to it than that. How do we arrive at these promotions? How do we decide upon the fashions we show? It all goes back to the fabric.

Last July after the mills reopened, I began to cover the fabrics market, looking at lines, colors . . . selecting this, rejecting that . . . often too early for anything but blankets, paintings, lab dyes, unfinished samples, etc. Often I asked for colors, textures, types of patterns I didn't see . . . I had some ideas of what I was looking for based on what had been successful in the Fall season, and what I expected to develop from that . . . but with an open mind for the unexpected and new. My office became cluttered with bits and pieces of fabric . . . scraps of yarn begged and wheedled from your New York offices . . . which grew even smaller and more miserable after meetings with the other fashion editors. After much discussion among the editors, involving silhouettes and ready-to-wear trends, shoes, leathers, other accessories, because all of these parts of fashion are interdependent and all stem from the fabric news, our decisions were collected into the report I have given you. This is a rewrite of the swatched report we sent out in late September to retailers, buying offices, ready-to-wear and shoe manufacturers . . . timed principally for the retailers . . . to give them our fashion thinking prior to their buying trips. We present no one fashion or color story, but several sound ones. It would be just as unrealistic to expect any one store, manufacturer or mill to have them all as it would be to expect all mills, manufacturers and stores, to have just one story.

Because of this, the theory that fashion news, color ideas, etc, should be kept secret is nonsense. That is why, when we decide on a story or promotion, we want as many people as possible to know about it, to talk about it. We take pains to see that it is not within one fabric or fiber alone and not with one mill or cutter only, because the more there is of it in the market, the stronger becomes our story . . . and the greater the ultimate sales at the consumer level.

We are not so much concerned with "scoops" as we are with sales. Yet frequently, by applying our own particular formula, we achieve both simultaneously.

Perhaps this tale may serve to illustrate the point: In January 1951 when our Fashion Editor, Betty Downey, was off to Paris to cover the collections, we discussed plans for our next Fall 1951 promotion. We decided that we would like to present a brilliant, green-tinged blue taken from a pair of Persian turquoise earrings. The color looked new, exciting, and quite different from anything that had been shown

(concluded on page P15)

Piedmont Section——

PRELIMINARY STUDY OF THE SIZING OF STAPLE ORLON AND DACRON*

W C WYLIE, JR
School of Textiles
Clemson Agricultural College, Clemson, S C

Hand sizing experiments were carried out with various sizing combinations on skeins of staple "Orlon" acrylic fiber and staple "Dacron" polyester fiber, in which sizing effectiveness was judged from breaking and serious fuzzing resulting from strokes on a Duplan Silk Cohesion Tester. From these experiments it has been concluded that "Orlon" and "Dacron" behave differently in sizing, that "Orlon" is easier to size than "Dacron", and that a mixture of polyvinyl alcohol and sodium alginate gave promise of the best results.

INTRODUCTION

THE need for a good size for staple "Orlon" and "Dacron" becomes quite obvious if one observes the fuzzing that takes place when yarn is subjected to abrasion similar to that produced by a loom. When staple yarn is abraded, it at first tends to fuzz excessively and then to knot before finally breaking. From experience we know that the ordinary sizes, such as starch, are not satisfactory on "Orlon" acrylic fiber and "Dacron" polyester fiber.

EXPERIMENTAL

In this investigation several polymeric sizing agents that showed promise for the above purpose were tried:

1) Polymethacrylic acid (PMA)
2) Polyvinyl alcohol (PVA)
3) Polyacrylic acid (PAA)
4) Sodium alginate
5) Copolymer of methyl vinyl ether and maleic anhydride (PMA/MA)

Henceforth these agents may be referred to by the abbreviation in parentheses.

These compounds were studied either individually or in combination in order to obtain a comparison of their values as sizing agents for these two new fibers.

The type of staple "Orlon" and "Dacron" used was commercial 24/1 yarn for both fibers. For sizing, a small skein (025-0.40 g) was used. This skein was thoroughly worked in the size mixture in a beaker at the desired temperature. After removal from the bath the skein was squeezed through the fingers to remove the excess size. The skein was then unwound from around the fingers through squeeze rollers onto a seriplane with the board replaced by a pair of test tubes arranged parallel to each other. This resulted in very even spacing of the yarn on the test tubes. The test tubes with the wound yarn were next placed in an oven and allowed to dry at 80-120° C (176-248° F). The dried yarn was again formed into a skein.

The sized and dried yarn was tested on a Duplan Silk Cohesion Tester for effectiveness of sizing agent. The yarn was threaded through this machine and abraded until approximately the same degree of fuzzing was observed on each sample or until the yarn broke. The number of strokes required to do this was recorded for all samples.

PREPARATION AND TESTING OF SIZES

POLYMETHACRYLIC ACID WITH SODIUM ALGINATE———The sodium alginate was moistened with alcohol and then dispersed with a portion of the total amount of water to be used. The polymethacrylic acid was dissolved in the remaining water at room temperature and heated to 66° C (151° F), then thoroughly mixed with the sodium alginate dispersion. The mixture was applied to the "Orlon" and "Dacron" staple yarns at 66° C (151° F).

COPOLYMER OF METHYL VINYL ETHER AND MALEIC ANHYDRIDE ———The weighed quantity of PVM/MA went into solution best when boiled with continuous stirring for a varying period of time depending on the percentages used. At higher concentrations the PVM/MA tends to go from a dough-like state to a gelatinous state and finally into true solution. The yarn was then sized with this solution at 50-55° C (122-131° F).

The viscosity of the size in Table IIa was greatest at pH 6, which was attained by addition of caustic soda to the mix, the pH of which before adjustment was 2. Batch 1 refers to a sample with a specific viscosity of 0.25. Batch 2 refers to a sample with a specific viscosity of 1g 2-butanone per 100 ml at 250° C.

POLYACRYLIC ACID———The polyacrylic acid was diluted from the 25% commercial solution to a 12% solution by

TABLE I
POLYMETHACRYLIC ACID AND SODIUM ALGINATE SIZES (66° C)

PMA %	Sodium Alginate %	Take Up %	Consistency	Duplan Test Strokes	Duplan Test Quality
			"ORLON"		
4	1.8	1.5	viscous	40	poor
6	3	33.8	viscous, stringy	80	fair
8	2	39.1	very stiff	70	fair
4	3	24.1	viscous	50	poor
3	1.5	10.9	viscous	25	poor
			"DACRON"		
4	1.8	8.95	viscous	40	poor
6	3	26.1	viscous, stringy	50	poor
8	2	31.2	very stiff	45	poor
4	3	19.3	viscous	43	poor
3	1.5	6.5	viscous	20	poor

* Winner of third prize in Student Contest before the Piedmont Section in Clemson House, Clemson, S C, on April 26, 1952.

TABLE IIa

"ORLON" SIZED WITH PVM/MA AT 50-55° C

PVM/MA %	pH 4	Take Up %	Consistency	Duplan Test Strokes	Duplan Test Quality
			BATCH 1		
12	2	37.3	fluid	61	poor-fair
12	6	51.6	sli thicker	104	fair
20	2	50.0	sli viscous	164	good
20	6	79.3	sli thicker	110	fair
			BATCH 2		
12	2	49.5	———	70	fair
12	6	21.4	fluid	70	poor
15	2	35.3	viscous	150	good
15	6	79.7	sli viscous	100	fair
20	2	109.0	viscous	140	good

TABLE IIb

"DACRON" SIZED WITH PVM/MA AT 50-55°

PVM/MA %	pH 4	Take Up %	Consistency	Duplan Test Strokes	Duplan Test Quality
			BATCH 1		
12	2	18.0	fluid	28	poor
12	6	15.3	sli thicker	15	poor
20	2	57.1	sli viscous	17	poor
20	6	38.6	sli thicker	30	poor
			BATCH 2		
12	2	19.5	fluid	40	poor
12	6	30.4	viscous	36	poor
15	2	37.0	sli viscous	30	poor
20	2	57.1	viscous	65	fair

the addition of water, and the size was applied in the usual manner from the very fluid solution at 57° C (135° F).

POLYVINYL ALCOHOL ——— The solid polymer was shaken into water with stirring at 60° C (140° F) to give a 13% solution of polyvinyl alcohol. To put the last traces of polyvinyl alcohol into solution, higher temperatures approaching the boil were required. The size was applied at 60° C (140° F).

POLYVINYL ALCOHOL AND SODIUM ALGINATE———A size containing 13% of polyvinyl alcohol and 1% of sodium alginate was prepared by thorough mixing of a solution of 13% of polyvinyl alcohol in 40 ml of water with 60 ml of a dispersion prepared from 1 g of sodium alginate moistened with alcohol and diluted with water. A mixture of 13% of polyvinyl alcohol and 2% sodium alginate was prepared in the same manner. These sizes were applied at 60° C (140° F).

The remainder of the size containing 13% polyvinyl alcohol and 2% sodium alginate (approximately 40 ml) was thinned with 6 ml of water and was applied on yarn at 60° C (140° F). The calculated concentrations of PVA and alginate were then about 11 and 1.7%, respectively.

TABLE III

12% POLYACRYLIC ACID AT 57° C (135° F)

Fiber	Take Up %	Consistency	Duplan Test Strokes	Duplan Test Quality
"Orlon"	29.2	very fluid	75	fair
"Dacron"	10.0	very fluid	13	poor

TABLE IV

13% POLYVINYL ALCOHOL AT 60° C (140° F)

Fiber	Take Up %	Consistency	Duplan Test Strokes	Duplan Test Quality
"Orlon"	50.4	quite fluid	80	fair
"Dacron"	33.9	quite fluid	35	poor

COPOLYMER OF METHYL VINYL ETHER AND ALGINATE———A 12% solution of PVM/MA (Batch 1) containing 2% of sodium alginate was prepared by mixing a solution of the first with a dispersion of the second in the manner already described. The sizing mixture was applied at 50-55° C (122-131° F).

CONCLUSIONS

The purpose of a size on staple "Orlon" and "Dacron" is to hold down the ends of the individual fiber of the warp yarn, which tend to come to the surface of the yarn when it is woven. From this preliminary investigation it appears that the size mixtures used were much more effective on "Orlon" than on "Dacron". On "Orlon" the size mixture composed of approximately 13% polyvinyl alcohol and 2% sodium alginate gave the best resistance to fuzzing. Also, the breaking point of the yarn as shown by the Duplan Tester was much higher than that of the unsized yarn. The size mixture used in this case is rather viscous and can probably be thinned down considerably for use commercially without reducing slashing efficiency below an acceptable degree.

A 15% solution of the copolymer of methyl vinyl ether and maleic anhydride showed the second-best abrasion and breaking results on "Orlon" acrylic fiber.

The other sizes, polymethacrylic acid, polyvinyl alcohol, polyacrylic acid, and sodium alginate, showed little promise of being successful for staple "Orlon" and "Dacron", with the exception of the combination of polyvinyl alcohol and sodium alginate.

These results show that there is no necessary correlation between the sizing properties of the same material on different fibers. It has been reported *(1)* that polymethacrylic acid, polyacrylic acid and polyvinyl alcohol showed definite possibilities as sizes for spun nylon while the same materials with the single exception of polyvinyl alcohol and sodium alginate, showed little promise on "Orlon" and even less on "Dacron" polyester fiber.

While it might be supposed that the higher the percent take up of size the higher would be the resistance to fuzzing, this is not necessarily true as shown by examining the percent take up and the Duplan test results for "Orlon" sized with the copolymer of methyl vinyl ether and maleic anhydride at 50-55° C (122-131° F) as shown in Table IIa.

Results on "Dacron" followed the same general pattern as on "Orlon", except that the abrasion and breaking results of these various agents on "Dacron" fell a great deal below the values found for "Orlon".

TABLE V

"ORLON" AND "DACRON" SIZED WITH POLYVINYL ALCOHOL AND SODIUM ALGINATE

Size Mixture % PVA	% Alginate	Take Up %	Consistency	Duplan Test Strokes	Quality
			"ORLON"		
10	2	69.7	like whipped cream	275	very good
13	2	103.1	like whipped cream	1318	excellent
11	1.7	96.2	sli thinner	650	excellent
			"DACRON"		
10	2	29.7	like whipped cream	75	fair
13	2	61.3	like whipped cream	100	fair
11	1.7	50.5	sli thinner	62	fair

TABLE VI

SIZING OF 12% PVM/MA (Batch 1) AND 2% ALGINATE

Fiber	Take Up %	Consistency	Duplan Test Strokes	Quality
"Orlon"	64.5	fairly viscous	107	fair
"Dacron"	35.4	fairly viscous	35	poor

In using the Duplan Tester to ascertain the effectiveness of a size on yarns, it must be kept in mind that the results are only relative and can only be used to determine comparative values of various products for large-scale work. The only sure method of testing the practicability of a size on warp yarn is actually to run the sized warp on a loom.

This preliminary study indicates that further work should be carried out with the size combinations that appear to be more promising, that is, with various mixtures of polyvinyl alcohol with sodium alginate and also with various concentrations of solutions of the copolymer of methyl, vinyl ether and maleic anhydride. However, only experiments on a large scale can determine the most effective solutions for practical work.

REFERENCE

(1) Langston, "Sizing of Spun-Nylon Yarns with Various Agents", *Textile Research J* 22, (No 2, Feb, 1952).

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Meeting Report—Western New England Section

December 12, 1952
Rapp's Restaurant, Shelton, Conn

A MEETING of the Western New England Section was held on December 12, 1952, at Rapp's Restaurant, Shelton, Connecticut. Approximately 50 members and guests were present to hear AATCC's Director of Research, Dr H W Stiegler, discuss "AATCC Research Projects and Policies". The function of the various research committees within the organization was discussed and typical contributions in the establishment of standard test methods were described. The Accelerator was displayed and its use in providing rapid test methods which can be correlated with currently used, more time consuming methods, as in laundering and abrasion testing, was demonstrated.

Raymond J Carey was elected councilor for the coming year to fill the vacancy created by Dr J E Lynn's resignation. Tribute was paid to Dr Lynn for his untiring efforts in the establishment of the Western New England as an active group in the Association.

Respectfully submitted,
A S NYQUIST, *Secretary*

—♦ ♦—

Fashion's Foibles

(concluded from page P10)

in recent seasons. With the established success of the red coat, we reasoned that a brilliant coat of another color could do as well. I had a couple of mills try lab dyes from the earrings, and air-mailed the swatches to Betty Downey in Paris, where she proceeded to let 100 or so of her "closest friends" glimpse a snippet of the color furtively . . . under tables, behind programs, etc. The result, of course, was a tremendous demand for this color throughout the market, and a howling success for the blue coat on our cover! In addition to the poodle-cloth coat, we had the color done in worsted jersey and satin, which was shown in a variety of merchandise for the rest of the season. This color turned up strongly in silks and cottons for the next resort and Spring season, and is still seen in the Summer collections for this year.

This story also helps to bring home the fact that, in order to make the fashion idea a reality, to lead the customer as we do from the early trend into the volume sales that mean business, the fashion magazine must have co-operation and backing all along the way: from the store, which agrees to place orders against the magazine credit to promote the fashion at the sales level with advertising and publicity and most important, *merchandise;* from the cutter, who places his fabric order early enough and in quantity that assures prompt delivery to the stores; and from the mill, which has the patience and vision to develop the new color or texture that our fashion sense demands . . . and makes it available on time to the cutter. This is where you come in . . . at the very beginning of the whole fashion plan . . . the handle by which the sword is held! And remember, your points are scored in dollars and cents only when the blade carries the point to the target!

Meeting Report—Rhode Island Section

December 5, 1952
Sheraton-Biltmore Hotel, Providence, R I

AT the Annual Meeting of the Rhode Island Section at 8:00 pm, December 5, 1952, at the Sheraton-Biltmore Hotel, the following officers, councilors, and sectional committeemen were elected for 1953:

Chairman: Ernest J Chornyei, Bradford Dyeing Association (USA)
Vice Chairman; Arthur F McLean, Glenlyon Print Works
Treasurer: J William Timperley, Kenyon Piece Dye Works
Secretary: Robert G Thomas, Rohm & Haas Company
Councilors: Edward W Lawrence (replacing R W Joerger, term expired) and Thorwald Larson (replacing E J Allard, term expired)
Sectional Committee: Earle K Bush, American Aniline Products; Arthur W Grover, Enterprise Dye Works; Boris Frankfurt, Glenlyon Print Works; and David O Payne, Warwick D & F Co.

Bertil Ryberg of Procter & Gamble gave a paper on detergency testing. The paper was illustrated by a colored sound film entitled "Leave Less to Luck".

Thorwald Larson, co-chairman of the Rhode Island Intersectional Contest Committee, read the 1952 first-prize-winning paper entitled: "The Printing of Acrylic & Polyester Fibers".

Approximately 150 members and guests attended the dinner and technical session.

Very truly yours,
ROBERT G THOMAS, *Secretary*

1952 ANNUAL MEETING— RHODE ISLAND SECTION

(Photos by John E Trezise)

• PATENT DIGEST •

PAUL WENGRAF

CHINTZ——Polymerizable Resins Applied in Thin Layers, Preferably by Printing G, 4

U S Pat 2,598,264
(Jos Bancroft & Sons——Jones, Stackpole——
May 27, 1952)

Attempts have been made to produce glazed chintz by applying thermosetting resins, glazing (frictionating) and curing. The preamble to the present specification refers to U S Pats 2,148,316 and 2,185,746 (see references below) which respectively suggest that the fabrics be fully immersed in the resin solution or that a temporary starch filler, removable in subsequent operation, be applied to prevent substantial penetration of the resin solution. Neither of these methods limit coating to the surface of the fabric only. Consequently the fabric retains the resin impregnation in the form of a continuous film, which is likely to crack and tear after hardening or to close the pores of the weave.

Although (as follows from U S Pat 2,185,746) the necessity of restricting the resin deposit to the surface portions only has been recognized, the effects have not been quite satisfactory. Even after a prior starch impregnation the coating fills the interstices between the threads as shown in Figures 1 and 2 (17 and 18). Although deeper penetration into the body of the fabric (16) is prevented, a continuous layer (18) is formed on the surface after glazing as illustrated in Figure 2.

In contrast thereto the inventors suggest the application of a thermosetting paste in an extremely thin layer (optionally on selected areas only) to the fabric. Very fine engraving of the printed roller is essential to cover just the top of the threads as shown in exaggerated size in Figure 3 (after printing) and in Figure 4 (after glazing). In fact the engravings (lines or dots) suitable for applying the printing paste are so shallow that the engraved roller cannot be used for standard printing as it is unable to carry sufficient amounts of color. The number of the grooves (at least in one direction) should be greater than that of the threads per inch. The dimensions of these grooves are limited to not more than 0.004" in depth nor 0.013" in width, so as not to impair the flexibility of the individual threads. The preferred thermosetting resin solutions are melamine-formaldehyde precondensates. Other types of aminoplasts can be used, however. After printing with a roller (as described above) the fabric is glazed and cured. Since the material remains porous it can be used for all kinds of clothing.

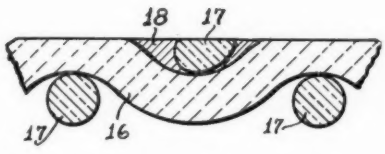


Figure 1

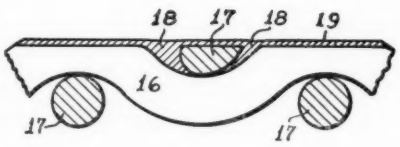


Figure 2

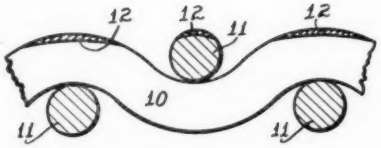


Figure 3

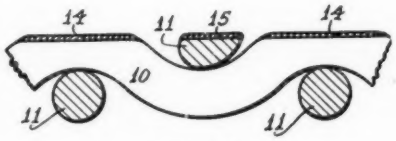


Figure 4

References cited by the Patent Office:

U S Pat 2,454,391 (Cranston Print Works/1948): obtaining printing designs on fabrics by using a paste which fixes the loose ends of the surface fibers, drying, frictionating to obtain a glaze on the printed and nonprinted areas, polymerizing the resin and removing the glaze from the unprinted portions by washing (cf Brit Pat 597,436; *Am Dyestuff Reptr 38,* 206 (1949).

U S Pat 2,446,864 (Quaker Chem Prod/1948): obtaining a durable, water-repellent finish by emulsifying a mixture of high-alkyl-substituted ureas and solvent-soluble urea-formaldehyde resins, padding, drying at moderate temperatures and baking.

U S Pat 2,304,818 (J R Ditmars/1942): a paper coating process in which a slurry is applied to the paper web. The slurried surface is smoothed with a wet roll at differential speed after which the web is finally subjected to a hot calendering process.

U S Pat 2,185,746 (Arnold Print Works/1940): obtaining permanently-glazed chintz by applying thermosetting resins on fabrics that have been starch-sized to prevent penetration, and thereafter removing the size.

U S Pat 2,148,316 (Jos Bancroft & Sons/1939): obtaining a glazed finish by applying an aqueous solution of urea-formaldehyde, drying below the curing temperature, glazing and curing at the same time.

Comparative photomicrographs of chemically-untreated glazed cloth and cloth prepared and glazed according to this invention are presented. Both samples show the same light transmission and the same size of pores.

STATIC PREVENTION——Vinyl Polymers Treated with High Alkylsulfates of Guanidine G, 1

U S Pat 2,597,708
(American Cyanamid——Cresswell——
May 20, 1952)

Vinyl polymers used for preparing fibers, films and the like are apt to accumulate static electric charges either in the production of these compounds or in subsequent finishing processes.

The inventor suggests for use as antistatic agents guanidine salts of monosulfuric aliphatic esters, represented by the general formula:

$$H_2N - \underset{\underset{NH}{\|}}{C} - NH_2 \cdot HO\text{-}SO_2\ OR$$

wherein R represents an aliphatic chain of 12-18 C-atoms.

These antistatic compounds are preferably used in connection with a customary textile lubricant, e g, an alkylester of a long chain fatty acid, a wetting and/or dis-

persing agent, a detergent (N-octadecyl disodium sulfosuccinamate), etc.

Example: a thread consisting of a copolymer of 90% acrylonitrile and 10% acrylamide, exhibiting strong accumulation of static electricity upon air drying, was immersed for 1-2 minutes at 40-50° C in an aqueous dispersion of 2% of guanidine octadecyl hydrogen sulfate and 1% of N-octadecyl disodium sulfosuccinamate. The latter compound is used as a dispersing agent. The sample was first dried at room temperature and then at 60° C in an oven for 30 minutes. After drying the swatch no longer developed static electricity.

References cited by the Patent Office:

U S Pat 2,464,247 (Am Cyanamid/1949): preparing guanidine sulfate from urea and ammonium sulfamate. These products are said to be useful as flameproofing materials, for preparing surface active agents, etc.

U S Pat 2,427,242 (Am Cyanamid/1947): a textile-softening composition comprising mixtures of substituted guanidine carbamates with amine salts of carbamic acid. These mixtures are further condensed with alkylene oxide.

U S Pat 2,320,225 (Am Cyanamid/1943): dicyano diamide or amidines, such as substituted guanidines, are reacted with compounds containing an ethylene oxide group to produce surface active agents.

U S Pat 2,286,364 (Am Cyanamid/1942): producing guanyl urea alkyl hydrosulfate by heating dicyano diamide with sulfuric acid in the presence of a primary or secondary alcohol. These products are said to be useful as wetting and dispersing agents.

U S Pat 2,176,402 (Am Enka/1939): a rayon lubricant consisting of a mixture of mineral oil, butyl stearate, a substituted hexylamine and a solvent.

Brit Pat 421,862 (Hunsdiecker, Vogt/1935): a high alkyl derivatives of guanidine or salts thereof used as wetting agents, the higher substituted members preferably as washing agents.

WATER REPELLENT TEXTILES Treated with Silicone Oil Emulsions G, 2, 02

U S Pat 2,597,614
(Harris Research Lab——Brown, Sookne, Minor ——May 20, 1952)

This method advocates the use of emulsions of organosilicon compounds instead of organic solvent solutions to avoid the risks of acid development at relatively high concentrations, and the difficulties of handling inflammable solvents. Better abrasion resistance and resiliency and a more pleasant hand are produced, it is claimed.

The invention is principally a treatment with an emulsion of silicone oils in water. Oily hydrolysis products of alkylchlorosilanes have been described in the past (cf U S Pat 2,386,259 in references below). Emulsions of this type are directly prepared, according to the current method, by adding a solution of monomethyl dichlorosilane in a suitable solvent to water mixed with an appropriate emulsifier. Solvents generally used are toluene or benzene, which act as diluents to prevent premature formation of highly-polymerized silicones. The preferable ratio is 4 vol monomethyl dichlorosilane to 5 vol benzene. Hydrolysis has to be effected at low temperatures to avoid polymerization and evaporation. The amount of water used in hydrolysis is within the limits of 2-100 p water for one part $Cl_2Si(CH_3)H$. Lesser amounts of water may form undesirable water-in-oil emulsions. Low acidity is attained by adding a neutralizing agent (sodium acetate) or by extracting with water the acid formed. The emulsifier is used in relatively small amounts (0.01-5% of the silicone derivative). Dimethyl dichlorosilane may also be added to the inert diluent.

Example: 4 vol monomethyl dichlorosilane are dissolved in 5 vol benzene. 2 ml of this solution are slowly stirred into 16 ml water containing 0.01 g Igepon T and 5.5 sodium acetate trihydrate. This emulsion is homogenized and further diluted with 100 ml water. A specimen of serge is agitated in this bath for 5 minutes, dried at 100° C, rinsed to remove adherent sodium acetate and emulsifier, dried and cured for two hours at 100° C. Excellent water repellency and a soft hand are said to result.

Among other references cited by the Patent Office:

U S Pat 2,482,307 (Du Pont/1949): reducing foam formation in vacuum-concentrating emulsions of synthetic latices by adding an aqueous emulsion of organosilicones, such as polymer dimethylsilicones, dissolved in organic solvents.

U S Pat 2,439,689 (Corning Glass Works/1948): glass wares and glass fibers covered with alkylsilicone polychlorides may be dissolved in organic solvents, then heated over 100° C (but below the decomposition point of the silicone organic compounds) to render the surface water repellent.

U S Pat 2,392,805 (Owens Corning Fiberglas/1946): a strand of glass fibers is impregnated with a silicone resin (phenyl ethyl siloxane) to bring about adhesion of the single fine threads. At the same time combination is effected with a high-chain-containing poly-(lauryl-) siloxane, which acts as a lubricant.

U S Pat 2,396,259 (General Electric/1945): a water-repellent treatment of fibers or bentonite with a solution of methyl dichlorosilane dissolved, e g, in toluene. After removal of the solvent aging at 100° C is performed.

Brit Pat 574,003 (Brit Thomson Houston Co/1945): alkoxysilicone compounds are prepared from silicone halides and low alcohols, preferably n-butanol, after which they are hydrolzed with water to obtain mixtures of silicols . . . $R_n Si(OH)_{4-n}$. Following a baking operation, these may be used for producing insulating films.

SHRINKPROOFING WOOL with Peroxide——Metal Salt Pretreatment A, 2, 04

U S Pat 2,599,977
(Brit Cotton & Wool Dyers Ass'n——Cunliffe et al——June 10, 1952)

Alkaline peroxide treatments of wool may cause degradation if the concentration of the bath is raised above a certain limit in order to attain a higher degree of shrinkproofing.

The inventors have discovered that shrinkproofing treatments with peroxide, percarbonate or perborate solutions can be controlled, avoiding fiber damage and at the same time attaining a substantial bleaching effect, by a pretreatment with dilute solutions of Cu-, Ni or Hg- salts. More level dyeing with milling dyes has been observed as an additional effect. The results depend on the nature and quantities of dye, temperature of the bath, concentration, pH, time of application of the "per-compounds" and bath ratio. It is believed that the effect is due to the fact that these metals exist in different states of valency. The metal salt concentration must not exceed 0.75% for Hg or Ni, nor 0.15% for Cu (calculated on the wool's weight). As a rule amounts between 0.002 and 0.15% are preferred in order to prevent discoloration.

The "per-compounds" concentration in the second bath must not be so high as to cause degradation. When H_2O_2 is applied a treatment with a solution containing 2-6 vol (calculated from a 100% concentration) at 50-60° C for an hour will be sufficient. The pH of this solution must not exceed 10.5; the limits are between 7 and 10.5. An aftertreatment with sodium bisulfite is recommended to remove metal residues and to increase whiteness.

Example: 100 p of all-wool underwear was pretreated in 3000 p of an aqueous solution of 0.01 p $CuSO_4$ at 75° C for about 10 minutes. After the fabric was removed and the bath cooled to 50° C, 60 p by vol of 100 vol 100% H_2O_2 and some sodium silicate were added to adjust the bath to pH 10.5. The fabric was immersed for an hour at 50° C, then aftertreated with a solution of 7.5 p sodium

bisulfite and 3 p sulfuric acid at 30° C to improve the whiteness. Prior to treatment by this method the material showed an area shrinkage of 25.4% after energetic washing; after treatment, the figure was 8.4%.

Among other references cited by the Patent Office:

U S Pat 2,081,327 (Franz/1937): bleaching fibers that have been optionally pretreated with hydrosulfite and immersed in a chlorine-free oxidizing (i e, peroxide) bath of pH 4.6-6.5. Phosphoric or boric or organic acids may be used alone or in combination with sulfuric acid.

U S Pat 2,406,412 (Imperial Chemical Industries/1946): shrinkproofing wool by exposing it to vapors of a vinylidene group containing monomers (e g, a vinyl-or acrylic ester) combined with water vapors.

Brit Pat 579,584 (Bleacher's Ass'n/1946): shrinkproofing wool by first reacting with sulfite to open the disulfide bonds and then treating the fibers with peroxide.

Weisskopf (*Am Dyestuff Reptr 32,* 163 (1943) describes advances in fur dyeing, using amines and phenols oxidized with peroxides to obtain aniline black type dyeings and optionally applying oxidation enzymes ("Peroxydase").

Principles of fur bleaching by catalytic methods, using various metal catalysts such as ferrous and ferric sulfates to promote peroxide bleaching, are discussed in *Textile Colorist,* pages 429 and 519 (1943). The formation of long chain polymerization products containing up to 12 Fe—atoms is assumed. Various pH values for the peroxide bleaching bath can be used and satisfactory results even at pH 4-5 have been observed under controlled conditions.

WATER REPELLENT ANIMAL FIBERS——Dilute Soap and Aluminum Salt Solutions

G, 2, 02

U S Pat 2,599,590
(Harris Research Lab——Sookne, Brown——
June 10, 1952)

A surprising water repellent effect on proteinaceous fibers has been attained by using very dilute soap and aluminum salt solutions in a two-bath process (in contrast to standard methods where generally high concentrated solutions are applied). The present process may be used for imparting water repellency to chlorinated or otherwise shrinkproofed material, it is simple and inexpensive, and it can be repeated at will to restore the hydrophobic properties after laundering or dry cleaning.

A characteristic feature of this method is the *very low concentration* of the reactants. (The claims protect the use of soap solutions of about 0.25% and of aluminum salt solutions of about 0.1%.) *Example:* a wool fabric is agitated in 0.25% soap solution for 15 minutes at 100° F, after which it is rinsed and aftertreated for 5 minutes in a 0.1% solution of aluminum sulfate octahydrate. The preferable bath ratio is 1:20.

The inventors assume that the protein molecule binds both the fatty acid and aluminum, thereby forming a water-resistant complex. Fabrics treated with higher concentrations as in customary processes give brittle finishes by the higher "add-on" of insoluble substances; consequently the pores of the fabrics become clogged and increased tackiness results.

In contrast, fabrics treated according to the latest process retain their flexibility even at low temperatures. They do not become brittle under the aforementioned conditions, e g, when used for protective purposes in Arctic regions. Conventional wool fabrics, such as wool felts, are known to break down on bending when exposed to extremely low temperatures.

Among other references cited by the Patent Office:

U S Pat 2,110,383 (Studienges fuer Faserveredlung/1938): rendering wool water repellent by a simple soap treatment, provided all impurities have been previously removed.

Reissue Pat 18,718 (Merkel & Kienlin/1933): preserving the natural, heat-insulating properties of wool and avoiding clogging of the pores by first preparing with an aqueous emulsion of soap and olive oil, then aftertreating with aluminum formate and drying at 60-80° C.

Brit Pat 403,957 (Boulet/1933): rendering wool water repellent by pretreating the goods with an alkaline solution (ammonia), then with a water soluble soap and finally with an aqueous solution of an alkaline earth or magnesium salt.

DYEING CELLULOSE ACETATE by Acid Vat Padding, Drying and Reducing Again

C, 4, 07

U S Pat 2,598,786
(Celanese Corp.——Haggerty, Jr, Ward——
June 3, 1952)

Dyeing cellulose acetate fibers with vat dyes according to standard procedure causes an excessive degree of saponification. This damage can partly be avoided by padding with acid vats (obtained by carefully neutralizing the alkaline leuco vats with acetic acid), but satisfactory results have been achieved only in dyeing textiles of rather light construction. Heavy fabrics, such as suitings, draperies and the like, could not be dyed uniformly by impregnation with vat acid suspensions.

Improved penetration of fabrics of the heavier type may be obtained in acid vat dyeing, according to the present invention, by first padding with the acid vat dispersion to which a dispersing agent (sodium naphthalene sulfonate) had been added, then drying and repadding with a soluble sulfoxylate formaldehyde plus alkali carbonate, aging at 100-110° C (thus revatting the dye within the fiber), reoxidizing, rinsing and soaping. Not only do penetration and leveling become satisfactory but no substantial saponification of the fibers occurs despite the presence of strong alkali carbonate solution at relatively high temperature. Analysis of the fibers before and after the process proved that the acetyl value of the original cellulose acetate fibers (54%) did not drop to less than 50% after dyeing.

Dyestuffs of the Indanthrene and Ponsol groups, e g, Indanthrene Red FBBA or Ponsol Jade Green (CI #1101), and many others are suitable for this dyeing method. Complete penetration combined with excellent fastness to light, washing and atmospheric fading are claimed.

Example: pad with a vat acid dispersion containing sodium naphthalene sulfonate at 50° C, dry in a hot flue, re-pad with an aqueous solution of 12% of Rongalite C, 12% of soda ash, 0.6% of sodium alginate at 40° C, immediately steam for 5 minutes and reoxidize with perborate.

The same method may be applied to other cellulose esters or to cellulose ethers.

References cited by the Patent Office:

U S Pat 2,415,379 (Du Pont/1947): a pigment-pad dyeing process which requires impregnating with a vat pigment dispersion, drying in a hot flue, passing through alkaline reducing agent at a temperature below that at which reduction occurs and finally passing through a chamber where the fabrics may be subjected to steam and to an alkaline reducing bath. (Cf *Am Dyestuff Reptr 36,* 419 (1947).

U S Pat 2,424,857 (Eastman Kodak/1947): dyeing cellulose ester fabrics with anthraquinoid vat dyes by padding with a mixture of dye and alkaline reducing agent (Rongalite), drying at temperatures not over 140° F to avoid reduction in this phase and finally, effecting vatting and superficial saponification at the same time (cf *Am Dyestuff Reptr 36,* 758 (1947).

Hennessey (*Am Dyestuff Reptr 36,* 775 (1947) reports practical experiences in vat acid dyeing using package-, piece- and continuous dyeing methods. Optimal formulations for several dye brands are given.

Recent developments in applying vat dyes are given in a paper by Stribling (*Am Dyestuff Reptr 34,* 99 (1945), in which special reference is made to the pad steam process and to variations in continuous vat dyeing methods.

Parallel British Pat 681,654 was issued on Oct 29, 1952.

NEWS

• X-2 Export to be Handled By Rutherford

Dan River Mills has made it known that export distribution of X-2, recently announced finishing compound for rayon and rayon blend fabrics, will be undertaken by Rutherford Dye and Chemical Company, New York, N Y.

Julius Lagazio, president of Rutherford, has made it known that the first sampling will be done in France and Italy, where large quantities of rayon goods are being manufactured. Technical data on the application of X-2 will also be made available to foreign users by Rutherford.

Though domestic licensees may not refer to the finish as "Dan River X-2," foreign users will be able to market it under the X-2 name, it is learned.

The X-2 chemical was first announced by Dan River Mills in November, 1951. Since that time various fabrics treated with the compound have been in commercial production. Claims made for the product include complete washability with fabric shrinkage of less than 2%. It is also pointed out that, unlike melamine resin finishes, it does not inhibit rayon fiber, but actually changes the molecular structure. Recent improvements reportedly make it easier to apply and a curing process has been eliminated.

In addition to permanently stabilizing rayon and rayon-blend fabrics, X-2 is said to impart the following properties:

(a) Stabilization against shrinkage and stretching.
(b) No retention of chlorine.
(c) High resistance to mildew.
(d) Permanent hand; any hand desired, from soft to crisp, may be established.
(e) Completely washable.
(f) Resistance to soiling.
(g) Resistance to perspiration odors.
(h) Resistance to wrinkling.
(i) Resistance to flex abrasion.

• 9th Technical Conference, SPE

A complete schedule of speakers, events and ladies entertainment has been organized for the Ninth Annual Technical Conference of the Society of Plastics Engineers, Inc to be held at the Hotel Statler, Boston, on January 21-23.

Featured speaker at the January 23rd luncheon will be General Doriot, President of The National Research and Development Corporation, who will resolve the various phases of the plastics industry and forcast the progress of "Plastics—Engineered for Tomorrow".

The program committee has scheduled prominent speakers for two sessions in the morning and two in the afternoon.

• Barail Services Expanding

Louis C Barail, consulting biochemist and toxicologist with offices and laboratory at 222 West 83rd Street, New York, is offering new facilities to industry.

On December 1, Dr Barail opened a second office at 10 East 43rd Street, New York 17.

• Bersworth Reduces Price of Versene

Frederick C Bersworth, president of the Bersworth Chemical Company of Framingham, Mass, has announced a reduction in the price of Versene by approximately 10%. The Versenes are versatile chelating agents.

The reduction carries over to Versene Fe3 and covers these two products in liquid, powder and bead form.

• Atco Becomes Metro-Atlantic, Inc

As a direct result of the expansion moves reported earlier by management, Atlantic Chemical Co, Inc of Centredale, Rhode Island, has announced the purchase of controlling interest in Metro Dyestuff Corporation, Quidnick, Rhode Island.

Because of this move, Atlantic has changed its name to Metro-Atlantic, Inc. This decision was made to demonstrate Atlantic's closer association with Metro's dyestuff operation.

The Canadian subsidiary of Metro-Atlantic, Inc will be known as Metro-Atlantic (Canada), Ltd, instead of Roxbury Chemical Company-Canada-Ltd, as formerly named.

Both changes took effect January 1.

• New ASA Project

The American Standards Association has called a meeting in New York for January 8 to initiate a project for determining performance specifications of textile fabrics. It has asked about 50 organizations to send representatives.

The American Hotel Association, which asked the ASA to call the meeting, will serve as sponsor in the standardizing work.

The project will be mainly based on the serviceability of the textiles in end use rather than on the construction specifications or fiber content. Home furnishings, men's and women's uniforms, utility clothing and other end uses will be covered.

Cotton and cotton mixed goods will predominate in the new project. However, the newer synthetics, other than those covered in the American Standard for Rayon, Acetate and Mixed Fabrics, will also be considered.

Organizations concerned with the production, retailing and use of textiles, and governmental and general interest groups are being asked to participate in this discussion.

All other orgaizations having a direct interest in the new project will be welcome to participate in the meeting. They should communicate directly with the American Standards Association, 70 East 45 Street, New York, N Y.

ADR NOW AVAILABLE ON MICROFILM

Arrangements have been completed with University Microfilms, 313 North First Street, Ann Arbor, Michigan, for supplying subscribers of the Reporter with a microfilm edition. This arrangement is effective with the 1952 volume. The film copy will be delivered at the end of the volume year for those who subscribe to the service and it will include all issues published during that period. It is estimated that the film edition requires only 5% of the space required for the paper edition, which is bound. Complete information is available from University Microfilms.

• GPA to Meet Jan 28th

The Glycerine Producers' Association will hold its annual meeting on Wednesday, January 28 at the Waldorf Astoria Hotel, New York. The meeting is scheduled as part of the annual convention of the Association of American Soap and Glycerine Producers, Inc, which will be held January 27 to 29.

Plans for the glycerine meeting include a luncheon at which the annual Glycerine Research Awards will be presented. The awards, established for the first time in 1952, are for the purpose of acknowledging and encouraging research which further advances glycerine's applications in industrial and consumer fields. The awards consist of an honor plaque carrying a cash stipend of $1000 and two honor certificates with cash stipends of $300 and $200 respectively. Judges for the awards are Sidney Kirkpatrick, Editorial Director of *Chemical Engineering*, R T Milner, Director of the Northern Regional Research Laboratory, and Roy Kienle, Director of Application Research for American Cyanamid Company. The awards will be presented by Dr John W Bodman, Technical Advisor to the Board of Directors of Lever Brothers Company and Chairman of the Research Committee of the Glycerine Producers' Association.

The program for the afternoon session of the meeting has been designed to interest both producers of crude glycerine and refiners of specification glycerine, as well as industrial consumers of the material. Included in the program will be a panel, made up of representatives of producers and refiners, on how yields and quality of crude glycerine can be improved. Instructions on how to avoid impurities which are difficult to remove and which cause below-specification product (because of foaming, color bodies, etc) will be emphasized. For those interested in the end-use picture of glycerine, a talk by Ralph S Heller, Technical Superintendent of the Olin Cellophane Division, is scheduled on the applications of glycerine as a plasticizer in cellophane and other cellulose wrapping materials.

• 15th Annual Meeting, NCC

Senator Burnet R Maybank of South Carolina and Herschel Newsome, master of the National Grange, will be the principal guest speakers at the National Cotton Council's fifteenth annual meeting at Dallas, Texas, January 26-27, according to an announcement by Harold A Young, president of the Cotton Council.

More than 750 representatives of all segments of the cotton industry and closely allied groups will participate in the council sessions at Dallas. Goal of the meeting is to plan cotton's industrywide activities for 1953 in the fields of utilization research, sales promotion, production and marketing, and foreign trade.

• Sterling Appointed Dexter Ad Agency

Joseph B Evans, Director of Sales, Dexter Chemical Corp, has announced the appointment of the Industrial Division of Sterling Advertising Agency, New York, as advertising counsel.

NAMES IN THE NEWS

O J Pemberton

GEORGE L ARMOUR, president of Dominion Anilines & Chemicals Ltd, Toronto, Canada, has announced the election, at a recent Board meeting, of O J PEMBERTON as vice president and general manager of the corporation.

Mr Pemberton had previously been active in his own business, The Harmon Color & Chemical Co.

Dominion Anilines & Chemicals Ltd is the wholly-owned subsidiary of American Aniline Products, Inc, New York, N Y, of which Mr Armour is also president.

W C GOODWINE has been appointed Product Manager of Plasticizers and Related Chemicals for the Chemical Division of Celanese Corporation of America. For the past five years he had been in organic phosphate sales for the company.

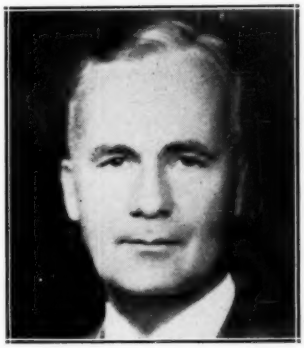
H C WHITTEMORE, Vice President of the Warwick Chemical Company Division, Sun Chemical Corporation, has announced the appointment of IRA S HURD as Director of Sales Promotion.

This appointment completes plans for expanding the scope of Warwick's New York promotional office and centralizes all phases of the company's promotional activities under Mr Hurd's direction. These activities include concentrated promotional programs on textile chemicals and auxiliaries, detergents, surface-active agents, textile and plastic printing colors, and stearates.

Mr Hurd has been associated with the textile industry for over 25 years, and formerly held the position of General Sales Manager of Warwick. He was associated with Glenlyon Print Works and Dan River Mills in various technical capacities.

In his new position, Mr Hurd will make his headquarters in the Sun Chemical building, Long Island City, New York.

E E HOUSE of the North Carolina Finishing Company, Salisbury, N C, won the Westinghouse Roaster and Cabinet given by the Royce Chemical Company at the AATCC Convention in Boston, November 5-8, 1952. To win, he guessed within 18.2 grams the weight of 6055.3 grams of vatrolite (sodium hydrosulfite) contained in a dessicator displayed at the Royce booth. House's guess of 6073.5 grams was the closest of 698 entries.

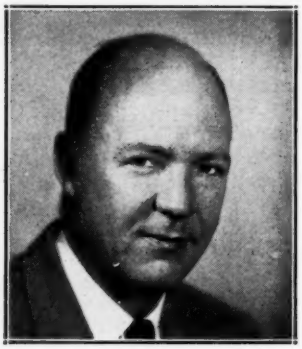


M E Bretschger

MAX E BRETSCHGER, formerly vice president of Buffalo Electro-Chemical Co, Inc, has been elected president of the company to fill the vacancy created by the death of CHARLES A BUERK, according to an announcement by PAUL L DAVIES, president of Food Machinery and Chemical Corp, of which Buffalo Electro-Chemical Co, Inc, is a subsidiary.

Mr Davies also announced the election of FREDERICK A GILBERT, formerly manager of Becco's Vancouver, Wash, plant, to the position of vice president. Mr Gilbert will make his headquarters in Buffalo. CHARLES J KELLOGG, formerly comptroller and secretary, was elected secretary-treasurer.

In addition, GEORGE G CREWSON, director of engineering, was elected to the Board of Directors.



F M Tolin

C E Cain

J P Seguin

ALCO OIL AND CHEMICAL CORP, Philadelphia, has announced the following personnel moves:

F McCAWLEY TOLIN has been named Director of Sales; C E CAIN has been appointed head of the Sales Service Division; and JOHN P SEGUIN has been appointed technical sales representative in the New England States. Mr Seguin will maintain a regional office in or about Providence, R I, to service the sales of synthetic and natural latex compounds and rubber chemicals.

Mr Tolin has been with Alco since 1950. His previous affiliations had been, successively, with du Pont's Rayon Division in Old Hickory, Tenn, Safetex Corporation, Port Chester, N Y (as plant manager), and R T Vanderbilt Company, which organization he joined in 1939.

From 1946 until the end of 1950, Mr Cain was associated with the Firestone Tire & Rubber Company. In January, 1951, he joined the Toyad Corporation, Lathrobe, Pa, as Chief Chemist. He remained there until November 1, 1952, at which time he became associated with Alco.

From 1937 to 1939, Mr Seguin was associated with the Diamond Alkali Company in their Research Division. From 1939 to 1943, he was with the Kansas City Limeolith Company, Kansas City, Mo, as Manager and Director of Research. From 1943 to December 1, 1952, he was connected with the Xylos Division of Firestone Tire and Rubber Company.

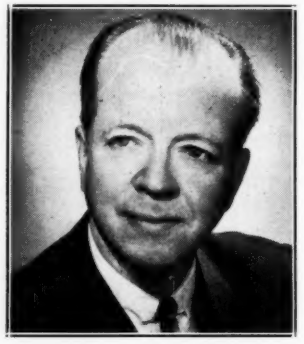
ROBINSON ORD has been named Vice President of Canadian Chemical & Cellulose Company, Ltd, and Vice President and General Manager of Canadian Chemical Company, Ltd, according to an announcement by Maxwell Weir Mackenzie, Executive Vice President of the two companies.

Mr Ord, who took over his new duties January 1 with headquarters in Montreal, has been General Manager of Sales for the Organic Chemicals Division of Monsanto Chemical Company since 1945. From 1930 to 1938 he was in charge of Monsanto's export department.

Canadian Chemical Company is currently building a $63 million plant at Edmonton, Alberta, for the production of chemicals from liquified petroleum gases and cellulose acetate and acetate textile yarn and fabrics. It is affiliated with Celanese Corporation of America.

J H BRUUN has joined Hooker Electro-Chemical Company, Niagara Falls, N Y, as director of research, according to a joint announcement made by R L Murray, president of the company, and J H Babcock, vice president in charge of development and research. With Hooker, Dr Bruun will have charge of all research activities including basic research, pilot plant development, and product application.

Dr Bruun has been with General Aniline and Film Corporation for the past ten years, having served as assistant to the



J H Bruun

vice president of operations, director of commercial development, director of research of GAF central research laboratories, acting works manager of the Renssalaer plant, and as director of the process development department. Dr Bruun's experience in chemical research also includes previous employment as manager of the research division of Sun Oil Company from 1932 to 1942. He was a senior research associate in the National Bureau of Standards from 1927 to 1932 and prior to that had been a production superintendent for American Aniline Products for three years.

FORREST AMES, who has for the last nine years been associated with Riggs & Lombard, Inc, Lowell, Mass, has resigned his position as sales manager.

A SERIES of personnel changes in the industrial chemicals department of the Atlas Powder Company have been announced by George J King, director of sales.

E JOHN CARUSO has been transferred from Wilmington to the Chicago sales office. As a technical sales representative, he will service customers in Minnesota, Nebraska, Iowa, and parts of Illinois.

DONALD A LEMIRE and STANLEY J DUMOVICH have been transferred from the company's sales trainee group to the industrial chemicals sales department and have been assigned to the sales correspondence group in the Wilmington office.

NOVEMBER appointments at The Chemstrand Corporation's Research and Development Department include the following:

WILFRED K WILSON and RODGER L SCHAEFER have been named group leaders. Mr Wilson was formerly an instructor at the University of New Hampshire and a research chemist at Shawinigan Falls Corporation. Mr Schaefer was a research chemist and chemical engineer at Monsanto Chemical Company at Dayton, Ohio, for 22 years.

Others assigned to new duties at Decatur are ALTON E PEACOCK, PAUL W GANN, RICHARD D RADFORD, CALVIN J WAITKUS, WALTER H HAMMOND and JAMES H PURNELL, JR.

W N Moore

WILLIS N MOORE, formerly of the Alco Oil and Chemical Co, Philadelphia, Pa, has recently joined the staff of Wica Co (Charlotte, N C) to head the Development and Control Laboratories. Mr Moore has been connected in the past with the Firestone Tire and Rubber Co, Latex Research Dept, and with the General Latex and Chemical Co.

RALPH TANNER, director of advertising and sales promotion of Mooresville Mills, has been appointed coordinator of sales and manufacturing, a new post. Mr Tanner will continue to work out of the company's New York offices.

Mr Tanner became director of advertising and sales promotion of Mooresville Mills in February 1950. He will continue to supervise these activities in addition to carrying out his new functions.

CHARLES ALLEN THOMAS, president of Monsanto Chemical Company and chairman of the board of directors of the American Chemical Society, has been chosen to receive the highest award in American industrial chemistry, the Perkin Medal of the American Section of the Society of Chemical Industry, for 1953.

The announcement was made by Robert C Swain, chairman of the Jury of Award and vice president of American Cyanamid Company.

The 1953 award will be the 47th impression of the Perkin Medal, which is bestowed for outstanding achievement in applied chemistry. Presentation of the medal to Dr Thomas will be made at a meeting of the American Section of the Society of Chemical Industry to be held at the Waldorf-Astoria Hotel in New York on January 16, 1953.

KYLE WARD, JR, head of the cellulose group at the Institute of Paper Chemistry, Appleton, Wis, has been elected chairman of the American Chemical Society's Division of Cellulose Chemistry for 1953. He succeeds JOSEPH L McCARTHY, head of the department of chemistry and chemical engineering at the University of Washington (Seattle).

A J STAMM, subject matter specialist at the United States Forest Service's Forest Products Laboratory, Madison, Wis, was chosen chairman-elect, and E D KLUG, research chemist for the Hercules Powder Company, Wilmington, Del, was named secretary-treasurer.

T R Scanlan, Jr

THE Hart Products Corp, New York, N Y, has announced the appointment of THOMAS R SCANLAN, JR, as salesman in the Pennsylvania, Maryland and South Jersey territories. He will assist THOMAS H HART, director of sales for Hart Products Corp, in that area. He was previously employed as a textile chemist at the Susquehanna Mills, Inc, in the Dyeing and Finishing Dept.

ROGER E GAY, president of The Bristol Brass Corporation, Bristol, Conn, and EDWARD T GUSHEE, vice president of the Detroit Edison Co, Detroit, have been re-elected president and vice president, respectively, of the American Standards Association. The announcement was made at the Association's Annual Meeting Award Luncheon at the Waldorf-Astoria on November 25.

OBITUARY

AARON C HORN

AARON C HORN, Chairman of the Executive Committee of Sun Chemical Corp, Long Island City, N Y, died on Nov 26th at his residence, 160 Central Park South, New York. He was 76. Until his death, he had been continuously active in the affairs of Sun Chemical, of which he was a director.

Mr Horn became Chairman of the Executive Committee at Sun following the merger of the A C Horn Co, of which he was president, with Sun in 1945. He began his career at the age of 13 with C T Reynolds Co, later Devoe & Reynolds. At the age of 21 he established his own company, manufacturing paints, varnishes and structual waterproofing products, in which field he was a pioneer.

Mr Horn's outside activities were many. At one time he was a dirtctor of the Building Trades & Employers Assoc and President of the Consolidated Building Trades Credit Assoc, was a former president of The Metropolis Club, spearheaded the drive for funds to purchase the Sara Delano and Franklin D Roosevelt homes in Manhattan which were turned over to Hunter College of New York for use as an Interfaith House, was a member of the Harmonic Club and a 33rd degree Mason, Marshall Lodge; was active in the Federation of Jewish Charities and the UJA and other communal work; was one of the leading organizers of the Joint Defense Appeal; and was on the advisory board of the Bank of Manhattan.

Surviving are his wife, Blanche; his daughter, Edna Seligmann; his son, Edward N; his brothers, A E, I W, David and Mack; his sisters, Carrie Fink and Julia Hamburger; his grandchildren, Noel Reid and Leon Mandel; and his great-grandchild, Joshua Reid.

CLARENCE E KINNEY

CLARENCE E KINNEY, 76, assistant to the director of the Naval Stores Department of Hercules Powder Company in Wilmington, Del, prior to his retirement in 1945, died November 25 in Kansas City, Mo.

Mr Kinney began his association with Hercules in 1921, where he served as manager of naval stores technical service until 1939, when he was named assistant to the director of operations.

HERBERT D WOJAN

FUNERAL rites for HERBERT D WOJAN were held on December 2.

Mr Wojan, who did experimental work with the "Mildew Project" during the war on material going to the South Pacific and who was in charge of the Army's textile laboratories at Jeffersonville, Indiana, spent thirty years in the textile field. Formerly in business with his father in the Wojan Company, Brooklyn, he originated the idea for a Textile Unit at the City College Midtown Business Center and was responsible for its founding.

H W BUTTERWORTH, JR

HARRY W BUTTERWORTH, JR, 62, Chairman of the Board of H W Butterworth & Sons Co, died December 17th at his home, 8408 Navajo Street, Chestnut Hill, Philadelphia.

Mr Butterworth devoted his entire business career to the Butterworth company, serving as director for 32 years, secretary for six years, vice president for nine years, and finally president from 1936 to 1952. He retired as president in March of 1952 and became chairman of the board.

In World War II, his firm produced gun mounts for the Philadelphia Ordnance District. Mr Butterworth received a personal citation in 1942 for designing and making his own machine tools rather than waiting an indefinite length of time for priorities. Because of his "ingenious and tireless effort which exemplifies the highest kind of patriotism in war production", Butterworth delivered gun mounts eight months ahead of schedule. Ordnance officials also pointed out his foresight in subcontracting work on nearly 350 of the 510 parts which make up a gun mount, permitting speedier assembly.

H W Butterworth, Jr

During the war, Mr Butterworth conducted training classes for 250 of his 500 employees, who operated the machine tools he designed for the Ordnance work. After the war, under his direction, the Butterworth firm consolidated manufacturing operations at Bethayres, Pa. They sold their plants in Philadelphia and Providence, R I, and erected new modern buildings at Bethayres.

Mr Butterworth was graduated from Cornell University in 1911 with a degree in mechanical engineering after taking his preparatory work at Mercersburg Academy.

He was in military service in World War I from 1917 to 1919, retiring as a captain in the Ordnance Reserve. Much of this service was in Canada on small arms ammunition problems.

He was president of the Philadelphia Chapter of the Metal Manufacturers Association in 1942-43, having previously served this organization as vice president, member of the executive committee, and treasurer from 1934 to 1940. He was a member of the American Legion, the Racquet Club, the Philadelphia Cricket Club, the Franklin Institute, the National Association of Manufacturers and the Edgemere Hunting and Fishing Club, Pike County, Pa.

Survivors include his wife, Beatrice Flood Butterworth; a son, Harry III, of Miami, Fla; a daughter, Mrs John Findley, of Chestnut Hill; a brother, DeHaven, vice president of the Butterworth firm; two sisters, Mrs Lewis C Dick, Chestnut Hill, Philadelphia, and Mrs John H S Spencer, Wyndmoor, Pa.

TECHNICAL LITERATURE

ASTM 50-Year Index

American Society for Testing Materials
1916 Race Street
Philadelphia 3, Pa
$6.00 per copy

This 50-Year Index provides a detailed author and subject index to all the ASTM technical papers and reports dealing with materials, particularly their properties and testing, appearing in ASTM publications covering the period from 1898 through 1950. From 1898 to 1902 the Society was known as the American Section of the International Association for Testing Materials. In 1902 the Society obtained its charter and was reorganized as the American Society for Testing Materials.

The Index is concerned basically with technical papers which have appeared in Proceedings, *ASTM Bull*, Special Technical Publications, or special compilations of standards. In addition, a number of technical reports have been referenced which, while not credited to a specific author, nevertheless provide worthwhile data and information which should be considered when searching the available data in ASTM publications on a specific subject.

The subject index includes hundreds of headings, and every paper or report referenced is listed under the major subjects and materials discussed. There is a separate condensed subject index listing all of the technical symposiums.

3rd Edition, Products and Services of American Cyanamid Company for Industry and Agriculture

American Cyanamid Company
30 Rockefeller Plaza
New York 20, N Y

This illustrated book contains a convenient listing and description of the products and services that American Cyanamid is now offering to industry and agriculture. It also outlines the divisional structure through which such products are sold.

Corn in Industry

Corn Industries Research Foundation
3 East 45th Street
New York 17, N Y

Besides describing the many uses of products from corn in both the food and industrial fields, this 64-page illustrated booklet explains the processes by which corn starch, syrup and sugar, and such by-products as corn oil and various feedstuffs are made. Also included are chapters on the historic backgrounds of corn, uses of corn products in defense, the contribution of corn refining to agriculture and commerce, and the future potentials of the grain.

Zizinia Packaged Unit Spray Dryers

Promotion Department
Foster D Snell, Inc
29 West 15th Street
New York 11, N Y

To those interested in spray drying, this eight-page booklet offers information as to performance and price on spray dryers engineered by Snell.

Snell claims that the trend toward spray drying by individual companies has increased over the last six years because the manufacturer with a limited budget has found that he can install a drying unit and operate it himself with a far greater saving than by using the more elaborate time-consuming methods formerly employed, or by having his material processed for him.

Diamond Soda Bleach Solutions

Diamond Alkali Company
300 Union Commerce Bldg
Cleveland 14, Ohio

Reviewing the latest approved and standardized procedures in daily plant practice to prepare sodium hypochlorite sclutions for applications involving bleaching and disinfecting operations, this 48-page manual provides a comprehensive, concise coverage of the subject from the user's viewpoint primarily.

The handbook describes the general properties of hypochlorites, analyzes the five major factors governing effective control of solution stability, and outlines calculations of chlorine, caustic soda, and water involved in producing bleach solutions of any given concentration. In addition, 13 specific tables are given, including charts listing quantities of materials and ice required to make 1,000 gallons of stable soda bleach solution.

The booklet also reviews refrigeration requirements, analytical methods for effecting chemical control, and necessary solution preparation equipment. Four cross-sectional diagrams illustrating as many typical installations complete this Diamond contribution.

Standard Textile Moisture Regain Index

United States Testing Company, Inc
1415 Park Avenue
Hoboken, N J

This handy pocked-sized card lists standard regains for both natural and synthetic fibers, such as Dacron, Orlon, Acrilan, Dynel and Vinyon.

Change Payments Into Profits with Check Beauty

Todd Company, Inc
P O Box 910
Rochester 3, N Y

This brochure, outlining methods of increasing company prestige and adding advertising impact through effective check design, has been prepared for the dry cleaning and laundry industry.

The brochure incorporates actual samples of outstanding checks in the dry cleaning and laundry field.

"Every check you issue is seen by an average of 16 people. . . . Only 50 checks issued per week bring your advertising to 41,600 people per year," the brochure points out. It adds: "You advertise your name, trademark, brand or products under the most favorable psychological conditions — receipt of money."

1953 Catalog, Eastman Industrial Chemicals

Chemical Sales Division
Tennessee Eastman Company
Division of Eastman Kodak
Kingsport, Tenn

An important addition to this year's catalog is the inclusion of those chemicals produced in whole or in part by Texas Eastman Company, Eastman Kodak Company's new chemical manufacturing division in Longview, Texas. Among those products resulting from the activities of the Texas division are n-butyric anhydride, isobutyraldehyde, isobutyl alcohol, isobutyl acetate, 3-methoxybutyl alcohol, 3-methoxybutyl acetate and di-isobutyl phthalate.

The 1953 catalog contains specifications, properties and typical uses of some 54 of the company's industrial chemicals and lists the various fields in which each compound finds its greatest use.

Another bulletin describing six Eastman aromatic amines has just been published. The six amines discussed are phenyl diethanolamine, phenyl ethyl ethanolamine, 2,5-diethoxyaniline, 2,5-dimethoxyaniline, meta-tolyl diethanolamine and ortho-tolyl propanolamine.

Included in the bulletin is information regarding the use and reactivity of these chemicals, specifications, miscibility in several solvents and shipping data. The various fields of usefulness mentioned in which these amines are found to be of importance include their function as dyestuff and light sensitive salt intermediates.

Polyco 497 (P-39)

American Polymer Corporation
Peabody, Mass

Technical data sheet P-39 discusses the properties and suggested uses of this alkali-soluble polyvinyl acetate copolymer in water dispersion, which is said to deposit films of exceptional clarity and water-resistance.

Among its suggested uses: thickening and emulsifying, adhesives, coating and sizing, warp sizing, etc.

Despite the fact that films of Polyco 497 are extremely water-resistant and water-repellent, they may be readily dissolved in dilute alkalis or ammonia, it is claimed. This property is valuable for treatment of paper products, nonwoven fabrics, etc, since the fiber may be recovered by an alkaline treatment. For textile finishes, the use of metal salts to insolubilize the free carboxyl groups will help to render such finishes resistant to removal by alkaline builders during laundering, it is pointed out.

Boiler Water Conditioning Catalog

E F Drew & Co, Inc
15 East 26th Street
New York 10, N Y

A new 12-page catalog outlining difficulties caused through industrial water contamination, recommended water conditioning treatments for scale, sludge, corrosion, carryover and other boiler conditions, and efficient control methods. Details on the Drew System of complete boiler water conditioning are fully explained.

Uniflow Industrial Water Conditioning Equipment

Uniflow Manufacturing Company
Erie, Pa

An illustration of a typical twin-tank Uniflow industrial softener installation is featured in this brochure showing mineral tanks, piping, top and lower headers, control valve, brine tank and exchanger bed.

Other material includes a discussion of specifications, an illustration and description of the solo control valve and a capacity table for seven models.

Carrier Dyeing of Dacron with Benzoic or Salicylic Acid

Heyden Chemical Corporation
342 Madison Avenue
New York 17, N Y

Techniques of dyeing "Dacron" polyester fiber by the use of benzoic acid or salicylic acids as carriers in the dyebath are outlined in this new technical bulletin.

Industrial Waste Treatment Guide

B-I-F Industries Inc
345 Harris Ave
Providence, R I

B-I-F Industries (Builders-Providence, Inc, Proportioneers, Inc, and Omega Machine Co), Providence, R I, have released this new eight-page bulletin (B-I-F No. 4), which contains a table showing the different types or combinations of unit treatment processes for more than 50 wastes. A second table shows the equipment used in the several unit treatment processes. A third shows B-I-F Industries equipment available for use in these waste treatment processes.

The bulletin contains a two-page spread flow diagram showing how the various treatment processes and equipment may be combined to treat mixed wastes. Installation photos of equipment are also included.

Prebleach Treatment of Wool with Formaldehyde

Peroxygen Products Bulletin P 59-652
Electrochemicals Department
E I du Pont de Nemours & Co, Inc
Wilmington, Delaware

This bulletin is one of a series on peroxygen and related products and their uses.

As a guide for evaluating a prebleach treatment of wool with formaldehyde, this illustrated bulletin aproaches the subject from the following angles: testing bleached samples, bleaching untreated wool, formaldehyde pretreatment, and bleaching treated wool.

Tables illustrate the effects of varying formaldehyde concentration, time and temperature in formaldehyde pretreatment, and formaldehyde treatment on alkali solubility and bleached whiteness. Graphs serve to show the effects of temperature on alkali solubility, time and pH on formaldehyde absorption, and formaldehyde pretreatment on alkali solubility.

Polyco 426 (P-40)

American Polymer Corporation
Peabody, Mass

Specifications, properties and suggested uses of Polyco 426, a new linear terpolymer in aqueous solution are presented in this technical data sheet. Tertiary amine groups attached to the main polymer chain reportedly impart remarkable adhesive properties to the resin.

Surface-Active Agents Find Widening Uses

Glyco Products Co, Inc
Brooklyn 2, N Y

This reprint describes the large number of nonionic surface-active agents made possible by varying the polyhydric alcohols and fatty acids. The chemical structure and physical properties of these agents are discussed and their specific uses in various industries given.

Annual Report 1951 National Bureau of Standards

National Bureau of Standards
Miscellaneous Publication 204
105 pages, 28 halftone illustrations
Price: 50 cents (order from Government Printing Office, Washington 25, D C)

Summarizing scientific and engineering investigations conducted by NBS during the fiscal year 1951, this booklet contains accounts of current activities as well as more detailed descriptions of especially important scientific developments. Its text provides a general description of work done in the 15 scientific and technical divisions and gives many specific examples of significant projects at NBS during the year.

New Machlett Bulletin

E Machlett & Son
220 East 23rd Street
New York 10, N Y

E Machlett & Son has published a new 4-page, 2-color folder illustrating and describing 15 laboratory items, most of which are sold exclusively by the firm.

The Causticaire Method for the Determination of Cotton Maturity and Fineness

Office of Information Services
Production and Marketing Administration
U S Department of Agriculture
Washington 25, D C

This report explains an improved and much more rapid method of measuring the maturity and fineness of cotton fiber, as compared with present methods, which has been developed and tested successfully in a preliminary way by the U S Department of Agriculture.

The new method consists of taking Micronaire readings (the micronaire is an instrument now used for measuring fiber fineness) on untreated cotton and on cotton treated with sodium hydroxide, using a new scale called the Causticaire maturity scale. The readings from the two measurements are used in an equation which yields an index of maturity of the fiber. This was named the "Causticaire method" because sodium hydroxide is used in the process, and the rate of flow of air through the fiber indicates its fineness and maturity.

For making the maturity test alone, the new method is said to require substantially less time than the present standard procedure and to give more consistently accurate results. The Cotton Branch of the Production and Marketing Administration, which made the study, reports that the new method promises to eliminate the bottleneck in cotton fiber testing caused by the relatively long time requirement for the present maturity test. But even more important is the fact that maturity test results obtained by the new method have much greater significance in evaluating the spinning performance of cotton than those obtained by the old method, it is pointed out.

The new method reportedly obviates the need for several different Micronaire scales for determining the fineness of cotton of different botanical types. Only two Micronaire scales are needed for the new method, one to determine maturity and the other for direct readings of fineness in terms of weight per inch of fiber.

For a fineness test alone, the Causticaire method requires slightly more time than the present Micronaire method. However, when both maturity and fineness are measured, no extra time is required for the fineness test, it is stated.

Instrumentation for the Marhen Process

The Foxboro Company
Foxboro, Mass

Bulletin 468, compiled in co-operation with General Dyestuff Corporation, provides a reference source of practical application data in the use of oxidation-reduction potential measurement for improving quality and uniformity of batch or continuous vat dyeing.

One section describes the Foxboro Dynalog Redox Recorder, its component parts and specifications, stressing the unique advantage of direct, continuous measurement from dyebath to instrument, with no pre-amplification equipment necessary. The bulletin lists 30 modern dyehouses where the Redox Recorder is in use to obtain a continuous millivolt record of dyebath reduction potential.

The 12 pages of text discuss the reduction theory, the measuring system, and further application possibilities. A brief history of the Marhen development is presented; fundamental chemical reactions examined; typical user results listed. Four pages, with installation photographs and diagrams, are devoted to the measurement of dyebath potential and its use in jig dyeing, package (or beam) dyeing, and continuous vat dyeing.

Treatment of Cellulose and Cellulose Derivatives with Peroxygen Compounds

Bulletin No. 43
Buffalo Electro-Chemical Co, Inc
Station B
Buffalo 7, N Y

Peroxygen compounds, notably hydrogen peroxide, are widely used in treating cellulose, cellulose derivatives and cellulosic materials. It is the purpose of this 11-page bulletin to picture the role played by peroxygen compounds in processes of this type. Various examples of uses to which these compounds are applied can be further explained by relating to convenient literature references listed as an appendix to the bulletin.

Industrial Water Analysis Book

E F Drew & Co, Inc
15 East 26th Street
New York 10, N Y
Price: $1.00

This new 57-page booklet on industrial water analysis covers in detail boiler water sampling, expressions of results, test equipment and general water analysis. Also outlines special tests for versenate hardness, dissolved oxygen, total solids, steam purity by conductance, corrosion tests by NDHA methods, etc. Factual, but also written for use by operators and nonchemists.

Bleaching Acetate and Nylon with Peracetic Acid

Bulletin No. 44
Becco Sales Corporation
Station B
Buffalo, N Y

Acetate and nylon present certain difficulties when the customary bleaching agents and procedures are used. With acetate there is the danger of saponification which interferes with the subsequent dyeing and making of fused skirt collars. With nylon, customary bleaching agents do not produce an acceptable white.

Peracetic acid is said to overcome these difficulties. Carefully developed bleaching procedures carried out on standard bleach house equipment are designed to produce excellent whites. The valuable properties of acetate are fully preserved and heat-set nylon is fully bleached, it is stated. These fibers may be bleached as such or in mixtures with cotton or viscose rayon because peracetic acid will produce a full white on them all, it is claimed. If cotton is present, mote removal is accomplished as well.

This new bulletin contains not only general information on the bleaching process, but also seven detailed process descriptions. These are based on mill practice and contain data on bleach formula, bath make-up, equipment and procedure.

Heliogen Colors

General Dyestuff Corporation
435 Hudson Street
New York 14, N Y

The properties and uses of GDC's line of Heliogen colors are covered in this booklet with full information on the powder brands, paste and presscake brands, water-dispersible powder brands and water-dispersible paste brands.

The Heliogens are for use in enamels, flushing in oils, lacquers, lakes, paints and lacquers, paper, plastics, printing inks, roof granules, rubber, and textile printing.

New Honeywell Literature

The following new literature is available from the Brown Instruments Division, Minneapolis-Honeywell Regulator Company, Stations 64 and 213, Wayne and Windrim Aves, Philadelphia 44, Pa.

ELECTRONIK TWO-SECOND SPEED POTENTIOMETER

Specification Sheet 179 gives full details of the new Brown *ElectroniK* Strip Chart Potentiometer with two-second full-scale pen travel.

AUTOMATIC RECORDING AND CONTROL OF pH——HYDROGEN ION CONCENTRATION

Brown-Cambridge system for automatic recording and control of pH is described in this new four-page data sheet. Sheet includes discussion of measuring system components adjustments for operation, as well as variations in recording and control systems for electric or pneumatic modes of control and single or multipoint recording —*Instrumentation Data Sheet No. 10.7-1.*

CATALOG 1520

Catalog 1520 contains factual information concerning *ElectroniK* noncontrol precision instruments, which employ a potentiometer, Wheatstone bridge, or other measuring circuit to measure temperature, pressure, flow, pH and other variables. Actually a handbook for engineers' and buyers' use, the literature presents detailed specifications for each particular model. Also included is information on specially adapted *ElectroniK* instruments, such as the Electrometer, Function Plotter, Scanning System, "TV Dial" Recorder, Double Range Precision Indicator, and Console Desk Precision Indicator.

THERMOMETERS WITH PNEUMATIC CONTROL

Specification Sheet 612 describes Brown Indicating and Recording Thermometers with pneumatic control. Construction and engineering details are included.

Aliphatic Nitrogen Compounds

F-4770
Carbide and Carbon Chemicals Co
30 East 42nd Street
New York 17, N Y

This book discusses in detail the 35 aliphatic nitrogen compounds that are sold in commercial quantities by Carbide; their uses in many industries, physical properties, specifications, shipping data, and constant boiling mixtures. The sections on physical properties and specifications are helpful in determining proper handling and storage procedures. A bibliography is included giving references in chemical literature to these amines and nitriles. The book also lists 18 amines that are available in research quantities and gives their suggested uses. These are recent products of Carbide's research laboratories.

An entire section is devoted to the specification test methods used by Carbide for its aliphatic nitrogen compounds. These laboratory control tests comprise some of the standard ASTM methods as well as new methods that have been developed by the company's own laboratories.

Victor Diammonium Phosphate in Wool Dyeing

Technical Service Bull V2-52
Victor Chemical Works
141 West Jackson Blvd
Chicago 4, Illinois

The scope of this technical service bulletin is, by practical and usable facts, to disclose the "know-how" thus far accumulated on the diammonium phosphate method of wool dyeing.

The bottom chrome, meta chrome and neutral methods of dyeing are discussed as are the metachrome and top chrome methods for top dyeing. Tables of selected colors for use with diammonium phosphate include those for neutral (dyeing method) colors, chrome colors, colors for shading piece goods and top dyeing colors.

Carbowax Polyethylene Glycols

Bulletin F-4772
Carbide and Carbon Chemicals Co
30 East 42nd Street
New York 17, N Y

This new book describes the chemical family, "Carbowax Polyethylene Glycols," with the aid of many formulas, giving the varied uses of the water-soluble liquid and solid polyethylene glycols, and the methoxy polyethylene glycols. A section on physical properties employing tables and charts as well as shipping and storage data for these compounds are presented.

An important feature is a section devoted to the technical and USP specifications of the polyethylene glycols as they are shipped by Carbide and Carbon. Complementing these specifications are detailed descriptions of the test methods recommended by the company to assure that the commercial material meets the specifications listed. These laboratory control tests comprise some of the standard ASTM methods as well as new methods that have been developed in the company's laboratories.

The Aniline Story

National Aniline Division
Allied Chemical & Dye Corp
40 Rector Street
New York 6, N Y

This brochure gives the history of man's first commercial synthetic organic chemical and describes its many present uses and future possibilities. Initially responsible for unlocking the doors to the vast synthetic dye industry, aniline has also become an important raw material in the manufacture of drugs, medicines, photographic film, rubber tires, explosives, rocket fuels, seed disinfectants, weed killers, antimildew agents, blueprint paper, printing inks, carbon papers and veterinary deworming pharmaceuticals. It is pointed out that present day American production is the equivalent of nearly a pound per annum for every man, woman and child in the U S A.

Bulletin 53-1—Witco Stearates

Witco Chemical Company
295 Madison Avenue
New York 17, N Y

A 32-page technical service bulletin describes the complete line of Witco Chemical Company stearates, their uses and properties.

All stearates manufactured in Witco's Chicago and Brooklyn plants including aluminum, cadmium, calcium, lead, lithium, magnesium, sodium and zinc stearates as well as special soaps are discussed in detail.

The various industries in which these compounds find applications and the characteristics of the compounds which fit them for each application are covered both generally and specifically.

The government specifications of metallic stearates as to grade, specification number and uses are listed. Also given are the analytical tests used, a guide to Witco's other products and the industries using them, and a list of the technical service reports which relate to Witco's stearates and special soaps.

Booklet on Syton

Textile Chemical Sales Department
Merrimac Division
Monsanto Chemical Company
Boston 49, Massachusetts

This 20-page, illustrated booklet cites the advantages of Syton, a chemical spinning aid for synthetic and natural fibers. The booklet includes several case histories of mill results with the product on the worsted systems.

Syton is described as a whitish, translucent, water dispersion of an amorphous silica that "has just one effect on fibers—increased inter-fiber friction for reduced fiber slippage." The chemical has no abrasive action on fibers or equipment, it is reported.

Charts and photographs illustrate the properties of the chemical as well as its application and formulation.

1953 Edition, Physical Properties of Synthetic Organic Chemicals

Booklet F-6136
Carbide and Carbon Chemicals Company
30 East 42nd Street
New York 17, N Y

This year, for the first time, the 20-page booklet includes a section on 56 new research chemicals available from Carbide and Carbon. Among them are synthetic alpha-picoline, diethoxy tetrahydrofuran, a source of succindialdehyde, and four new vinyl monomers.

The new edition presents data on more than 320 products. For easy reference, the chemicals are arranged by family groups. Condensed data on applications are presented and physical properties are given in tabular form.

"Karbate" Brand Impervious Graphite Pipe and Fittings

Catalog Section S-7000
National Carbon Company
30 East 42nd Street
New York 17, N Y

Catalog Section S-7000 includes many tables of standard sizes for pipe and fittings, flexible couplings, connectors, parts and accessories, centrifugal pumps and globe valves. Threading and serrating tools and assembled fittings are described and illustrated. Engineering information also is included as a guide in the design and operation of "Karbate" equipment in the chemical and process industries.

The design of "Karbate" pipe and fittings for quick installation in piping systems requiring ease of machining and fabrication is emphasized along with a discussion of the equipments' light weight, excellent corrosion resistance, freedom from metallic contamination and high resistance to thermal shock. Machinability, plus high joint strengths provided by "National" resin base cements, makes possible field adjustments and repairs that are impractical with many other corrosion-resistant materials, it is claimed.

A section of the catalog contains design information on operating pressures and temperatures, allowance for thermal expansion, installation supports, flange connections and permissible flexibility and misalignment by the use of flexible couplings and "Flexlock" joints. A chart of "Do's" and "Don'ts" of installation practices is included.

Care and Use of Analytical Balances

Christian Becker
Division of Torsion Balance Co
Clifton, N J

Information is provided in this booklet on the proper choice of location for the balance and how to assemble and mount it. Other sections include information on the historical development of the precision weighing and a discussion of the techniques applied in determining weight and checking sensitivity and operation of a balance. General precautions to be observed in the care and use of a balance, based on the company's experiences in manufacturing balances since 1835, are also provided.

Abstracts

(concluded from page 4)

oxide, etc, can be developed in situ or added in some other way.

The author intends to show manifold applications of this apparatus, reporting some experiments he carried out himself. Thus the effect of a vapor treatment of cellulose with or without the addition of acetic acid (added dropwise through the funnel of the flask) was compared with an untreated sample, which showed no substantial difference. Vapor containing CLO_2 developed in the flask from chlorite and sulfuric acid, did not form oxycellulose as expected, but in the same treatment wool became fast brown and disintegrated finally. Monochloramine NH_2CL produced from ammonium sulfate and sodium hypochlorite did not attack cellulose but reacted strongly with wool, rendering it brittle, while natural silk remained unchanged. Atmospheric oxygen mixed with water vapors did not produce oxcellulose, thereby contradicting somewhat the often-expressed opinion that air contained in bleaching kiers was the reason for weakening of the material by oxycellulose formation. (The author is aware however that this damage occurs mainly under superatmospheric pressure, not producible in this device). Another example is the saponification of acetate of cellulose by ammonia vapors; this was proved by altered dyeing conditions with Congo Red.

Chemists are advised to use this little device for studying all kind of steaming operations in the processing of textiles. (In German)—PW